

Alaska's CVISN Level One Top-Level Design Description



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1. INTRODUCTION

Within the context of the National ITS Architecture, the Commercial Vehicle Information Systems Networks Program or *CVISN* is a dynamic program with flexible components and operating topologies, capable of adopting and implementing new and different commercial vehicle solutions. It is the thoughtful, careful design of National ITS Architecture that makes this dynamic flexibility possible.

Alaska, along with forty two (42) other states, has made a commitment to *CVISN*. This is a commitment to implement *CVISN* technologies and methods to make its highways safer, reduce delays for safe commercial vehicle carriers and use state enforcement resources as effectively, and efficiently, as possible. This undertaking is substantial, and will take a number of years to complete. This effort has the potential to revolutionize commercial vehicle enforcement in Alaska. This document identifies pieces of this change and reflects the work Alaska has done to date, and plans to do in the near future, to move closer to *CVISN* level one deployment.

Achieving *CVISN* Level 1 status will require that certain computer systems be modified in order to communicate with *CVISN* systems and other State systems. In Alaska, Level 1 compliance will also mean deploying *ASPEN* to the commercial vehicle inspectors and implementing a Commercial Vehicle Information Exchange Windows Interface or *CVIEW* interface. The Operational Scenarios for Alaska's *CVISN* Level 1 processes have been used extensively in the development of Alaska's *CVISN* architecture, interface specifications, and top-level design. These operational scenarios are included in Section 9.

Also, a special thanks is in order for Randall Allemier of Meyers, Mohaddes Associates, Inc. Randall graciously allowed Alaska to incorporate the form and format of a document he previously prepared, into this document, reducing production time and adding clarity to this document's structure.

Bill Quinn
Alaska CVISN System Architect
Anchorage, Alaska June 2, 2000

2. CVO ADMINISTRATION

Commercial Vehicle Operations (CVO) administration is the responsibility of the Division of Measurement Standards and Commercial Vehicle Enforcement, a division of the Department of Transportation and Public Facilities or *MSCVE*. Two other agencies coordinate and cooperate with *MSCVE* in commercial vehicle enforcement in Alaska; the Department of Public Safety, and the Department of Administration Division of Motor Vehicles and Division of Information Technology. These agencies comprise the nucleus of the Alaska working group that is dedicated to achieving CVISN Level 1 status.

Alaska is well positioned to achieve CVISN Level 1 status within the timeframe established by the Federal Motor Carrier Safety Administration or *FMCSA*. Alaska has been working toward deploying services and completing system upgrades that will meet both the letter and intent of CVISN Level 1 since 1998. Soon, CVO inspectors will upload ASPEN inspection reports to Avalanche from the roadside using analog modems, cellular modems or dedicated network connections located at the weigh stations. Avalanche will then simultaneously send a copy of the inspection to the SAFER data mailbox or *SDM* and at the same time transfer a copy of the inspection to a SAFETYNET holding directory to be held for review by the SAFETYNET administrator. SAFETYNET 2000, the upgrade to SAFETYNET 10, is expected to arrive in July, at which time it will become a central component of Alaska's CVISN Level 1 deployment strategy.

In the long term, Alaska plans to have up to fifty (50) inspectors operating ASPEN units. These units will be assigned to mobile teams and used at fixed facilities where ASPEN will be run on desktop units. The inspectors using these ASPEN units are expected to utilize ASPEN to complete 90% or more of the all inspection activity by June 2001.

Alaska is neither a NorPass or a PrePass state. While Alaska may choose to negotiate agreements with either or both of these providers, at this time, it has chosen only to formally commit to open standards technologies.

The Glenn Outbound Weigh Station or *GOB* is the location chosen for initial deployment of CVISN Level 1 technologies. It is located just east of Anchorage and will be equipped with WIM and AVI technologies to allow vehicles that are equipped with AVI transponders, operating within legal weight limits and meeting specific safety criteria, to bypass the weigh station, saving safe, legal carriers time and money.

3. CVISN BACKGROUND

In 1991, the United States Congress saw fit to enact and fund a series of new programs to address inefficiencies in the transportation industry. These programs, contained in the Intermodal Surface Transportation Efficiency Act of 1991, Public Law 102-240, 105 Stat. 1914, initiated Federal funding for what is known as Intelligent Transportation Systems and Commercial Vehicle Operation, or *ITS/CVO*. Some flavor of ITS/CVO programs have been or are now being implemented in 42 states and one or more U.S. territories, with cooperative ventures underway with Canada and Mexico.

Intelligent transportation systems represent the application of information processing, communications technologies, advanced control strategies, and electronics to the field of transportation. Information technology in general is most effective and cost beneficial when systems are integrated and interoperable. The greatest benefits in terms of safety, efficiency, and costs are realized when electronic systems are systematically integrated to form a whole in which information is shared with all, and systems are interoperable.

In the transportation sector, successful CVO-ITS integration and interoperability require addressing two different and yet fundamental issues; that of technical integration and institutional integration. "Technical integration" of electronic systems is a complex issue that requires considerable up-front planning and meticulous execution for electronic information to be stored and accessed by various parts of a system. "Institutional integration" involves coordination between various agencies and jurisdictions to achieve seamless operations and/or interoperability. In order to achieve effective institutional integration of systems, agencies and jurisdictions must agree on the benefits of ITS and the value of being part of an integrated system. They must also agree on roles, responsibilities, and shared operational strategies.

Finally, they must agree on standards and, in some cases, technologies and operating procedures to ensure interoperability. In some instances, there may be multiple standards that could be implemented for a single interface. In this case, agencies will need to agree on a common standard or agree to implement a technical translator that will allow dissimilar standards to interoperate. This coordination effort is a considerable task that will happen over time, not all at once.

Successfully melding both the technical and institutional issues requires a high-level conceptual view of the future system, careful, comprehensive planning and skillful negotiations. The framework for the anticipated system is referred to as the "architecture." The architecture defines the system components, key functions, the organizations involved, and the type of information shared between organizations and parts of the system. The architecture is, therefore, fundamental to successful system implementation, integration, and interoperability. To insure interoperability and therefore functionality, a National ITS Architecture has been created and adopted.

4. THE NATIONAL ITS ARCHITECTURE

The Intermodal Surface Transportation Efficiency Act of 1991, as referenced earlier, was, at the time of passage, largely focused on research, development and operational tests of technologies. A key part of the program was the development of the "National ITS Architecture." The National ITS Architecture was developed specifically to provide a common structure for the design of ITS systems. This architecture defines the functions that could be performed to satisfy user requirements and how the various elements of the system might connect to share information. It is not a system design, nor is it a design concept. However, it does define the framework around which multiple design approaches can be developed, each one specifically tailored to meet the needs of the user, while maintaining the benefits of a common approach.

Since September 1993, the effort to develop a common national system architecture to guide the evolution of ITS in the United States over the next 20 years and beyond has been managed by the FHWA. The National ITS Architecture describes in detail what types of interfaces should exist between ITS components and how they will exchange information and work together to deliver the given ITS user service requirements. The National ITS Architecture and standards can be used to guide multi-level government and private-sector business planners in developing and deploying nationally compatible systems. By ensuring system compatibility, the National ITS Architecture can serve to accelerate ITS integration nationwide, insure interoperability and develop a marketplace for related products and services.

The National ITS Architecture aids in the development of a high-level conceptual view of future systems. This can assist governments in identifying applications that will support their future transportation needs. From an institutional perspective the National ITS Architecture helps transportation planners identify other stakeholders who may need to be involved and to identify potential integration opportunities. From a technical interoperability perspective the National ITS Architecture provides a logical and physical architecture complete with process specifications to guide the design of a system. The National ITS Architecture also identifies interfaces where standards may apply, further supporting interoperability.

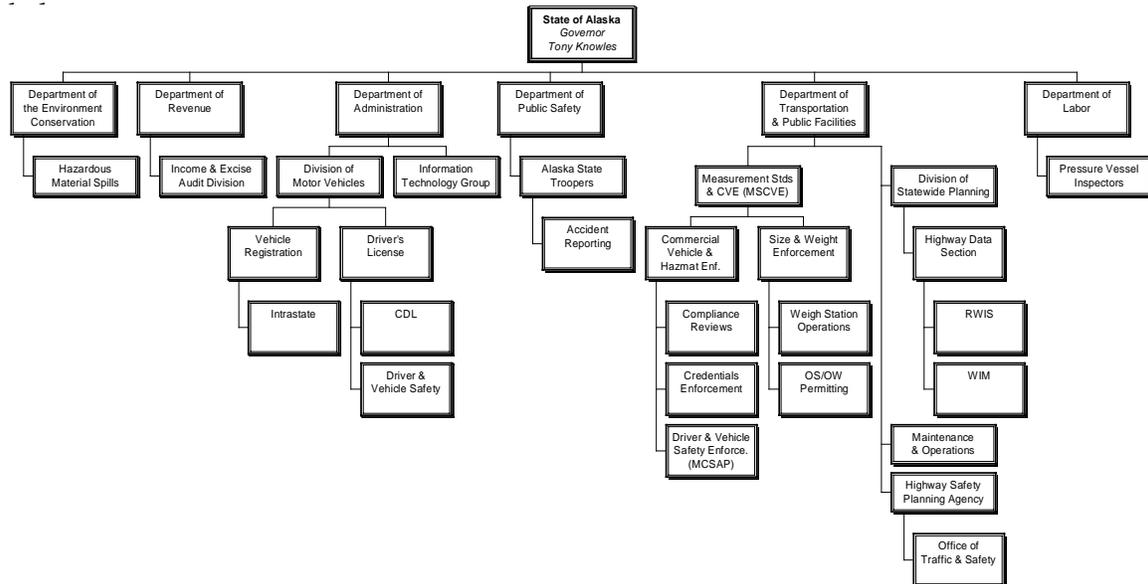
Section 5206(e) of the TEA-21, Public Law 105-178, 112 Stat. 107, at 457, requires ITS projects funded through the highway trust fund to conform to the National ITS Architecture, applicable or provisional standards, and protocols.

5. SYSTEM REQUIREMENTS

A. ALASKA SPECIFIC GOALS

The implementation of CVISN in each state is unique and driven by the computer systems, communication capabilities and other related systems and regulations in use at the time of implementation.

The Alaska Department of Transportation, Division of Measurement Standards and Commercial Vehicle Enforcement or *MSCVE*, is the lead agency responsible for the enforcement of federal and state commercial vehicle laws and regulations. This section describes specific goals that meet Alaska's CVISN program and regulatory environment as well as requirements for the CVISN Level 1 systems that will be deployed. The Alaska CVISN effort involves a number of divisions, departments, and programs as shown



Alaska's state specific goals and objectives have been developed through the ITS/CVO business planning process and documented in the ITS/CVO Business Plan. The goals and objectives are drawn from the national ITS/CVO goals and objectives and related objectives are added to ensure effective local implementation of ITS/CVO projects. In addition, goals that are more project-specific are also provided. These goals reflect Alaska's commitment to CVISN, both in the near-term and in the long-term. Alaska has six (6) specific goals identified for CVISN implementation.

5.1.1 Improved Highway Safety

Goal: *Improve safety by targeting enforcement on high-risk carriers, drivers, and equipment.*

Related Objectives:

1. Increase education and information opportunities.
2. Improve equipment maintenance practices.
3. Focus enforcement agencies on higher risk carriers.
4. Reduce the frequency and duration of stops for “model” carriers.

5.2.1 Automated Credentials

Goal: *Improve the ease, satisfaction, and automation of obtaining credentials when mutually advantageous to the public and private sectors*

Related Objectives:

1. Facilitate electronic registrations and renewals for commercial vehicles
2. Increase focus on non compliant carriers
3. Web Based Registrations or *WEBCAT*
4. Automated Renewal of Commercial Motor Vehicles
5. Online OS/OW Permitting
6. Credentialing Interface (CI)

5.3.1 Electronic Screening

Goal: *To improve roadside enforcement operations and maintain the basic infrastructure supporting the efficient movement of commercial vehicles.*

Related Objectives:

1. Identify carriers, drivers and vehicles operating unsafe or illegally.
2. Reduce the frequency and duration of stops for safe and legal carriers
3. Install electronic Screening at the Glenn Outbound Weigh Station
4. Design and install CVIEW interfaces or comparable system
5. Prioritize transportation improvements that meet the needs of commercial vehicles as well as other modes.
6. Enhance the efficiency and effectiveness of regulatory agencies
7. Promote improvements in CV transportation hubs and connections
8. Improve the monitoring and documentation of oversize/overweight vehicle impacts on the infrastructure and assist the state in the identification of key maintenance challenges.

5.4.1 Maximize Resources with ITS

Goal: *Enhance commercial vehicle transportation safety and increase government efficiency and productivity through the application of ITS technologies*

Related Objectives:

1. Supply current safety and credential information to roadside computers and inspectors
2. Electronic collection and distribution of inspection data to state and national systems

3. Ability to perform electronic screening checks of safety, weight, & credentials

5.5.1 Safety Information Exchange

Goal: *Facilitate electronic transfer and retrieval of inspection and safety data*

Related Objectives:

1. Complete Physical Network Infrastructure Upgrades
2. ASPEN – Pilot Deployment
3. ASPEN – Full Deployment to State Inspectors
4. ASPEN – Deployment to third party Inspectors

5.6.1 Common Carrier Identification

Goal: *Enable method to insure positive and swift identification of carriers, vehicles and drivers*

Related Objectives:

1. Implement US DOT numbering system to all intra- and interstate carriers.
2. Simplify the monitoring of intrastate and interstate carriers.
3. Utilize Unique transponder ID's to identify individual vehicles
4. Utilize VIN and trip ID to identify loads
5. Improve and assure proper inspection process per carrier, vehicle and driver.
6. Link to FEIN for additional confirmation

B. OPERATIONAL CONCEPTS AND TOP LEVEL DESIGNS – COACH PART 1

This section outlines Alaska's commitment to the ITS/CVO compatibility criteria detailed in Chapters 2 through Chapters 6 of the CVISN Operational and Architectural Compatibility Handbook, Part 1, referred to as *COACH*. *COACH* identifies the criteria CVISN states must incorporate in their respective CVISN deployments to insure compatibility and interoperability with other state and federal systems.

The participating State of Alaska agencies and a representative contingent of Alaska Commercial Motor Carriers have reached consensus on levels of commitment and participation as set forth in the *COACH*, Parts 1, 3 and 4. These commitments and the work that lead to their adoption highlight the cooperative private-public relationship in Alaska and the unique operating and enforcement environments faced by Alaskan participants. The full details of these commitments can be found in Appendix A. Those commitments that are unique to Alaska are as follow:

1. Alaska will implement online registration for commercial vehicles after the HVUT Form 2290 issues are resolved
2. A full scale Web Cat is not economical or practical for Alaskan Carriers
3. Alaska does not and will not participate in IFTA or IRP

4. Alaska participants plan to use XML and/or other technologies for new systems

C. INTERFACE SPECIFICATION CHECKLISTS – COACH PART 4

This segment details the commitment level to CVISN interface specifications described in COACH Part 4. The interface specifications presented in COACH 4 provide a means of evaluating mainframe computer systems and other information systems to determine what changes and/or modifications will be necessary to allow these systems to participate in CVISN. Adherence to the interface standards insures data compatibility and computer interoperability with other CVISN states and the FHWA.

Overall, the State of Alaska and its commercial vehicle operators are committed to meeting the requirements posed by these specifications.

6. ALASKA'S CVISN ARCHITECTURE

This section describes Alaska's physical CVISN Architecture, which is based upon the National ITS Architecture. As noted in Section 3, The National ITS Architecture provides a common structure for the design of intelligent transportation systems. It is neither a system design or a design concept; the National ITS Architecture defines the framework upon which multiple design approaches can be developed, allowing each design to meet the individual needs of the user, while at the same time, maintaining the benefits derived from a common architecture.

6..1.1 The Building Blocks of An ITS Architecture

The National ITS Architecture is comprised of four systems; *Traveler*, *Center*, *Vehicle*, and *Roadside*. These four systems are further divided into nineteen subsystems; two for Traveler, nine Center subsystems, and four each for the Vehicle and Roadside systems. The specific choice of nineteen subsystems represents a lower level of partitioning of functions deliberately intended to capture all anticipated subsystem boundaries. Figure 1 shows the four systems and the nineteen subsystems associated with them. Subsystems are composed of equipment packages with specific functional attributes. Equipment packages support analyses and deployment and represent the smallest units within a subsystem that might be purchased.

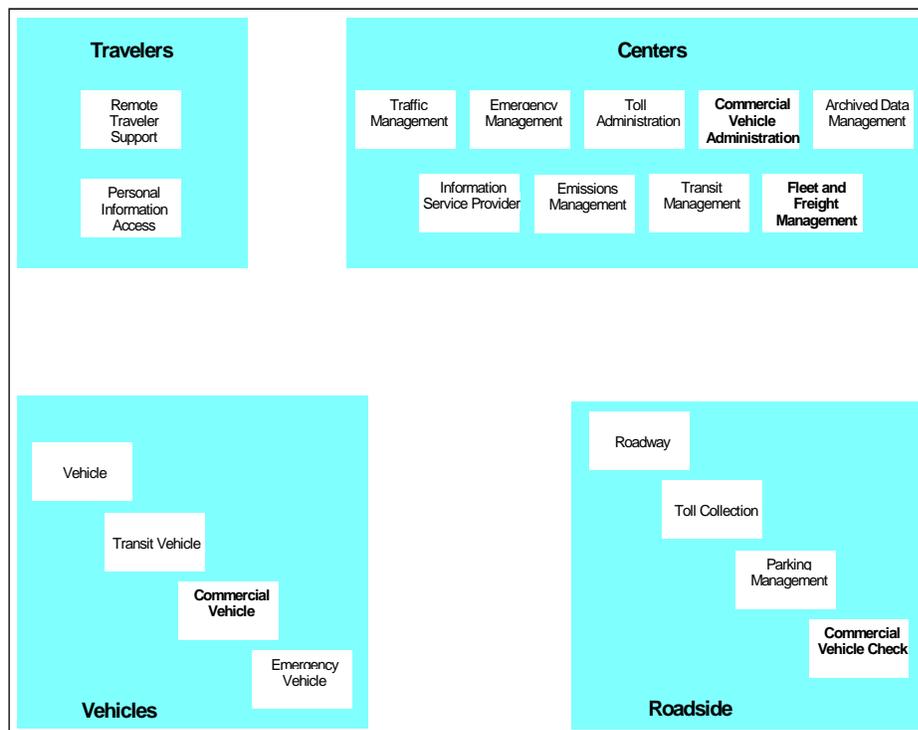


Figure 1: National ITS Architecture Centers and Subsystems

6..2.1 Equipment Packages

Equipment packages are the building blocks of the Physical Architecture subsystems. Equipment Packages group similar processes of a particular subsystem together into an “implementable” package. The grouping also takes into account the user services and the need to accommodate various levels of functionality. The equipment packages can be used as a basis for estimating deployment costs as part of any evaluation performed. Since equipment packages are both the most detailed elements of the physical architecture, and tied to specific market packages, they provide the common link between the interface-oriented architecture definition and the deployment-oriented Market Packages.

6..3.1 Market Packages

In the National ITS Architecture one or more equipment packages are grouped together to form *market packages*. Market packages provide an accessible, deployment-oriented perspective to the Architecture. They are tailored to fit, separately or in combination, real world transportation problems and needs. Market packages deliver a given transportation service and show the architecture flows that connect the component equipment packages together, and with other important external systems. In other words, market packages identify the pieces of the physical architecture that are required to implement a particular transportation service. An example of a market package is shown in Figure 2. This market package provides the weigh-in-motion service.

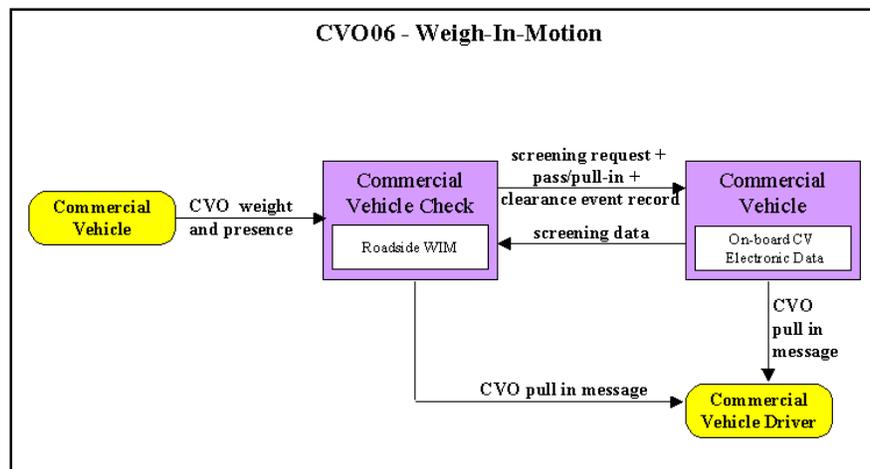


Figure 2: The Weigh-In-Motion market package showing architecture flows, subsystems, and terminators.

An important characteristic of successful ITS design is the consideration that subsystems need to communicate with each other for maximum efficiencies to be achieved. While the Architecture does not specify communication technologies, it does establish a framework for communications. The Architecture identifies four communication media types to support the communications requirements between the nineteen subsystems; *wireline* (fixed-to-fixed), *wide area wireless* (fixed-to-mobile), *dedicated short-range*

communications (fixed-to-mobile), and *vehicle-to-vehicle* (mobile-to-mobile). A top level subsystems interconnect diagram that identifies the communications media interfaces between the architecture's nineteen subsystems is shown below in *Figure 3*.

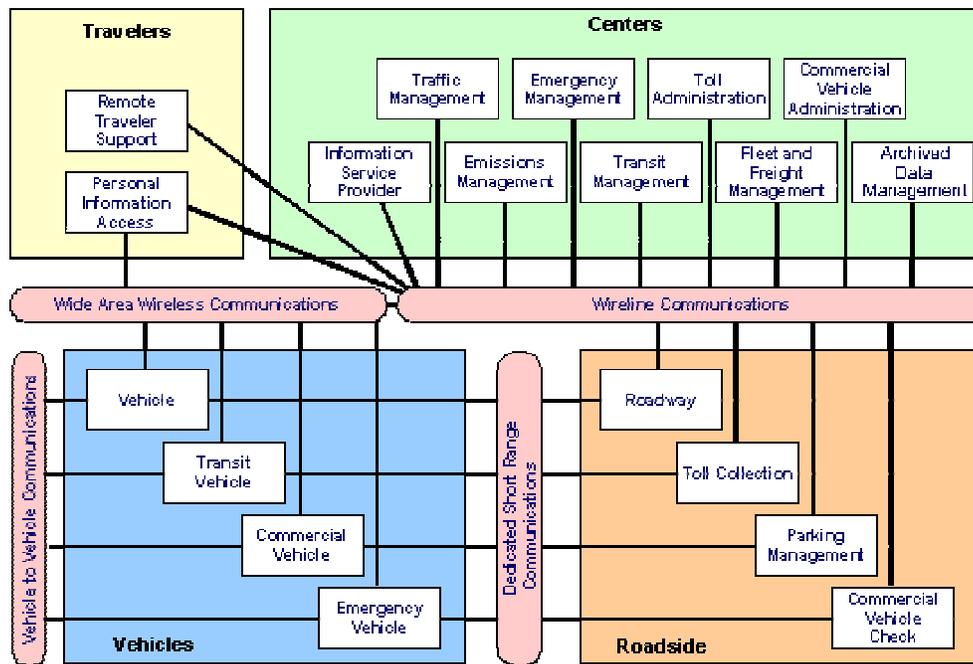


Figure 3. The National ITS Architecture centers and subsystems shown with the communications layer

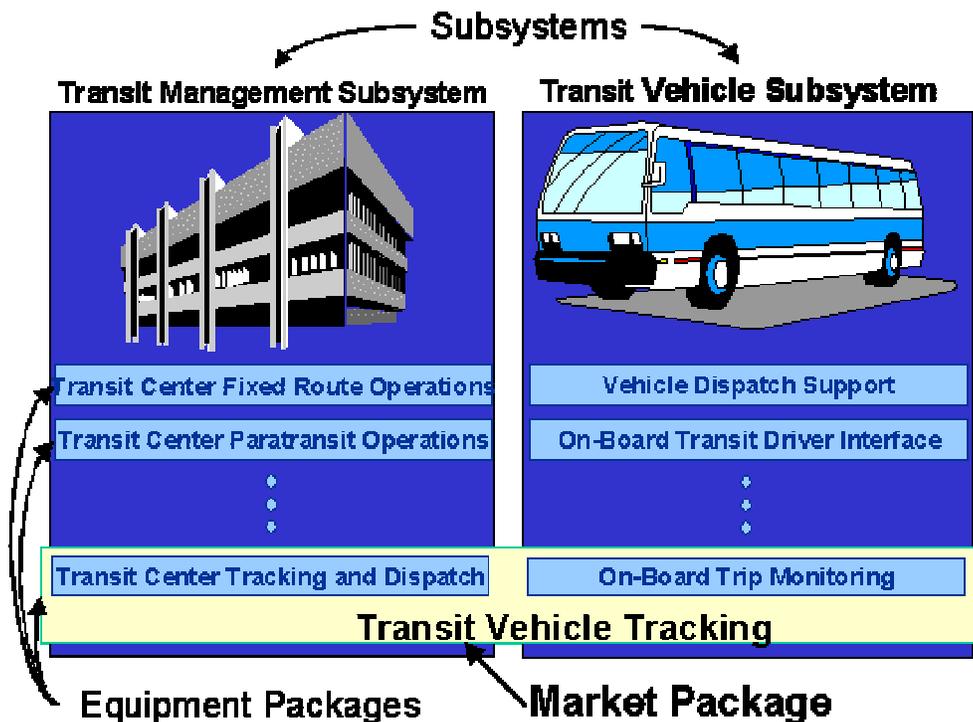


Figure 4. The make up of market packages

6..4.1 Developing Alaska’s CVISN Level 1 Architecture

A deliberate, structured process was used to create Alaska’s CVISN Architecture. This process used input from meetings with the Alaska CVISN Team, Trucking Industry stakeholders, DMV, ITG, and information gathered as a result of the CVISN Scope and Planning workshops, as follows:

1. **Identify** the existing Alaska CVO administration and carrier elements that will be part of the CVISN architecture.
2. **Map** each of these elements to the National ITS Architecture.
3. **Identify** elements that currently do not exist, but will be needed, and map these elements to the National ITS Architecture. CVIEW is an example.
4. **Select** the market packages that are pertinent to meet CVISN Level 1 requirements and met state defined requirements.
5. **Modify** the architecture flows, subsystems, and terminators so that the architecture meets all goals and requirements of Alaska’s CVISN Program.

Step 1 - Identify the Elements

The starting point for developing an ITS architecture is to identify all existing elements that can eventually be integrated into the architecture. These elements can be individual computer systems, groups of computer systems, sensor systems, or people. The current focus is on identifying and integrating elements that are needed to achieve CVISN Level 1 status. However, for completeness, some elements that are not part of CVISN Level 1 have been included in the architecture. These elements include CAPRI, special permitting, HazMat reporting, crash reporting and others. Other elements will be added to the architecture later. An example of elements that will be added later is the complete crash reporting system. The complete crash reporting system was not included in the current architecture because it will incorporate entities that are extraneous to Alaska’s present efforts in CVISN such as NHTSA, hospitals, and the Alaska judiciary.

Alaska’s current version of the CVISN architecture includes elements addressing safety inspections, credentials administration, and electronic screening. There are twenty four (24) elements that meet these criteria. These elements are show in Figure 4, below.

People	Computer	Sensor
CV Inspectors	ASPEN	Weigh In Motion
CV Drivers	Safetynet	RWIS
	SAFER	
	MCMIS	
	OS/OW Permitting	
	Credit Card Payment - Dept. Revenue	
	Licensing & Insurance = DMV	
	Intrastate Registration – DMV	
	Citations & Accidents - MSCVE	
	Citations & Accidents – DPS	
	Computer	
	Roadside Operations - MSCVE	
	Roadside Operations – DPS	
	Roadside Operations – Local Jurisdictions	
	Internet Licensing & Titling - DMV	
	Highway Traffic Safety Data - DOT	
	Licensing & Insurance - MSCVE	
	CDLIS – DMV	
	MCMIS	
	AAMVAnet – MSCVE	
	CAPRI	

Figure 4. Alaska's Existing Elements**Step 2 – Map Existing Elements to the National ITS Architecture**

For a physical architecture, the National ITS Architecture identifies two different types of elements; *terminators* and *subsystems*. The architecture also describes the architecture flows between them. Terminators represent the boundary of the architecture. Depending upon the application, an element may be a terminator or a subsystem. The human and sensor elements shown in Figure 4 are terminators in Alaska's CVISN Architecture. Subsystems can be groups of computers and sensors or a single computer system. This means that subsystems are comprised of similar functionalities.

Alaska has a total of three (3) National ITS Architecture subsystems that map to existing systems:

1. Commercial Vehicle Administration
2. Commercial Vehicles Check
3. Commercial Vehicle

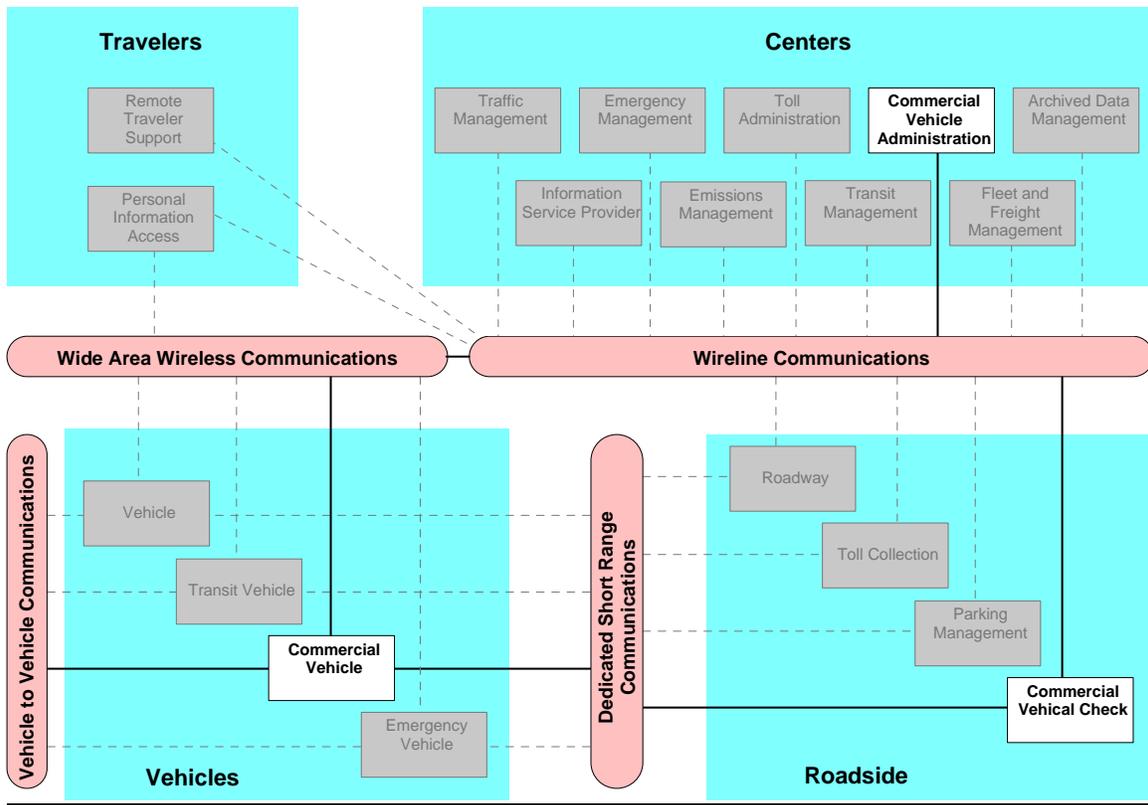


Figure 5. Alaska CVISN Systems mapped to the National ITS Architecture

Table 1, below, shows the mapping of existing Alaska CVISN elements to the architecture subsystems shown in Figure 5. Table 1 also lists the elements of existing Alaska CVISN elements that are purely terminators. The National ITS Architecture defines a total of 73 different terminators. Alaska has 4 terminators among its existing CVISN elements.

Table 1: Existing Subsystem and Terminator Mapping	
Subsystem	Element
Commercial Vehicle Administration Subsystem (CVAS)	<ul style="list-style-type: none"> • SAFETYNET • SAFER • MCMIS
Commercial Vehicle Check (CVC)	<ul style="list-style-type: none"> • Weigh-In-Motion (terminator)
Terminators	
CVO Inspector	<ul style="list-style-type: none"> • MSCVE, DPS and Other CV Inspectors
Financial Institutions	<ul style="list-style-type: none"> • State government and carrier banks

Using the existing elements an interconnect diagram has been created showing existing interconnections between subsystems and terminators.

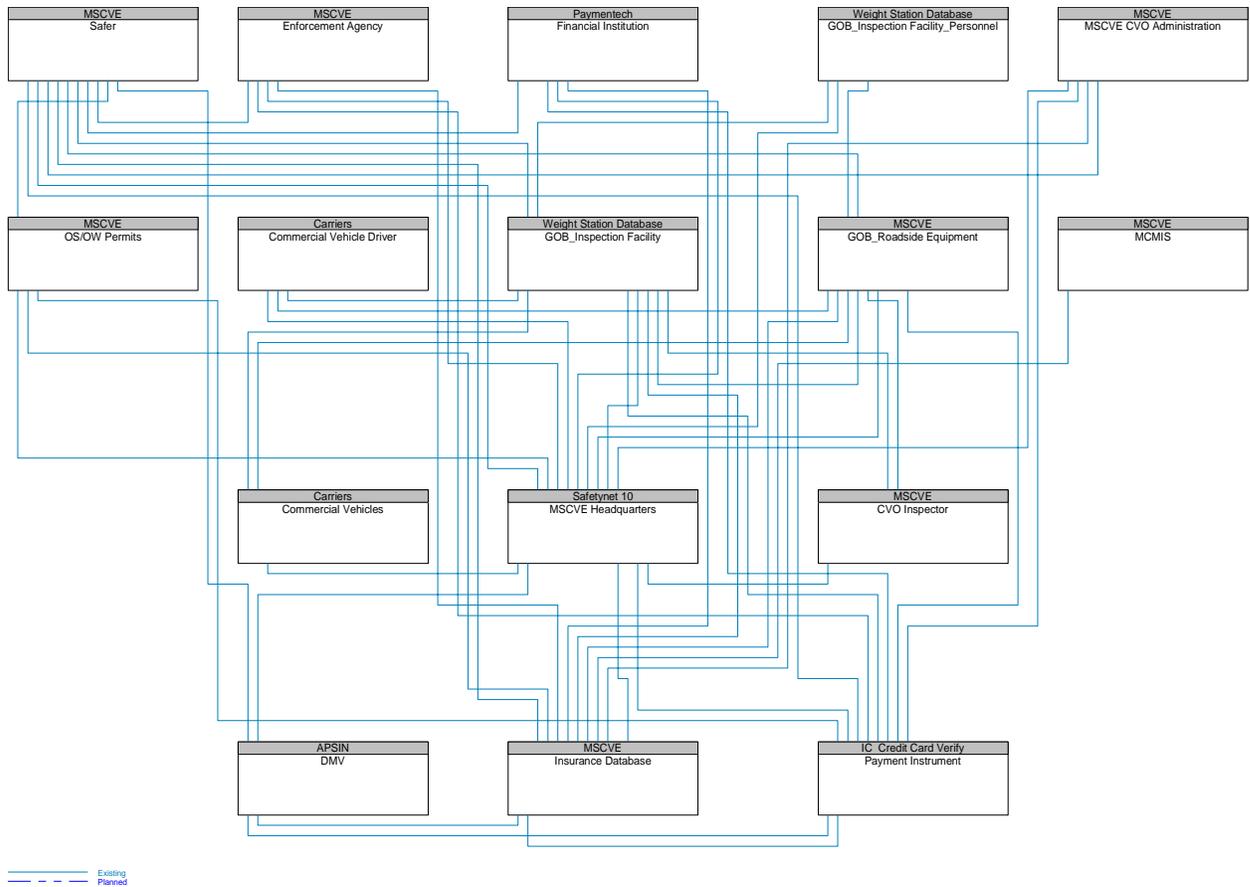


Figure 6. Alaska existing interconnects

Step 3 – Identify Additional CVISN Elements

Alaska has some components in place to achieve CVISN Level 1 status. However, there are two elements that currently do not exist. These elements are ASPEN and CVIEW. Also, ASPEN-32 and SAFETYNET-2000 will be included in Alaska's planned CVISN architecture. CVIEW and SAFETYNET-2000 are members of the Commercial Vehicle Administration subsystem class. ASPEN-32, like its predecessor, is a member of the Commercial Vehicle Check class.

Step 4 – Select - ITS Market Package Selection

Alaska's planned CVISN architecture has been developed using four ITS market packages as the foundation. Due to Alaska's operating environment, regulatory climate and exemption from IFTA and IRP, the market packages are tailored to produce the final physical architecture that will meet Alaska needs and comply with CVISN Level 1 requirements.

Electronic Clearance (CVO3)

Automated clearance at roadside commercial vehicle check facilities/weigh stations is provided by the Electronic Clearance market package. The roadside check facility communicates with the Commercial Vehicle Administration Subsystem over wireline to retrieve infrastructure snapshots of critical carrier, vehicle, and driver data to be used to sort passing vehicles. This package allows safe, legal carriers to pass roadside facilities at highway speeds using transponders and dedicated short-range communications to the roadside. The roadside check facility may be equipped with weighing sensors, transponder read/write devices, computer workstation processing hardware, software, databases and other data tools.

CV Administrative Processes (CVO4)

Electronic applications, processing, fee collection, issuance, and distribution of CVO credentials will be provided by this market package. Alaska already offers on line registration for private vehicles. Once the HVUT Form 2290 verification can be done electronically, Alaska will initiate an electronic CV registration process. This process, will allow carriers, drivers, and vehicles to be enrolled in the features provided by the Electronic Clearance market package, which will allow commercial vehicles to be screened at mainline speeds at commercial vehicle checkpoints. Through this enrollment process, current profile databases, such as CVIEW and SAFER will be maintained in the Commercial Vehicle Administration Subsystem and snapshots of data from these systems will be made available to the commercial vehicle check facilities at the roadside to support the electronic clearance process.

Weigh-In-Motion (CVO6)

This market package provides for high speed weigh-in-motion with or without AVI attachment. This market package provides the roadside with additional fixed equipment. This fixed equipment will be an addition to the electronic clearance package and will work with the AVI and AVC equipment in place.

Roadside CVO Safety (CVO7)

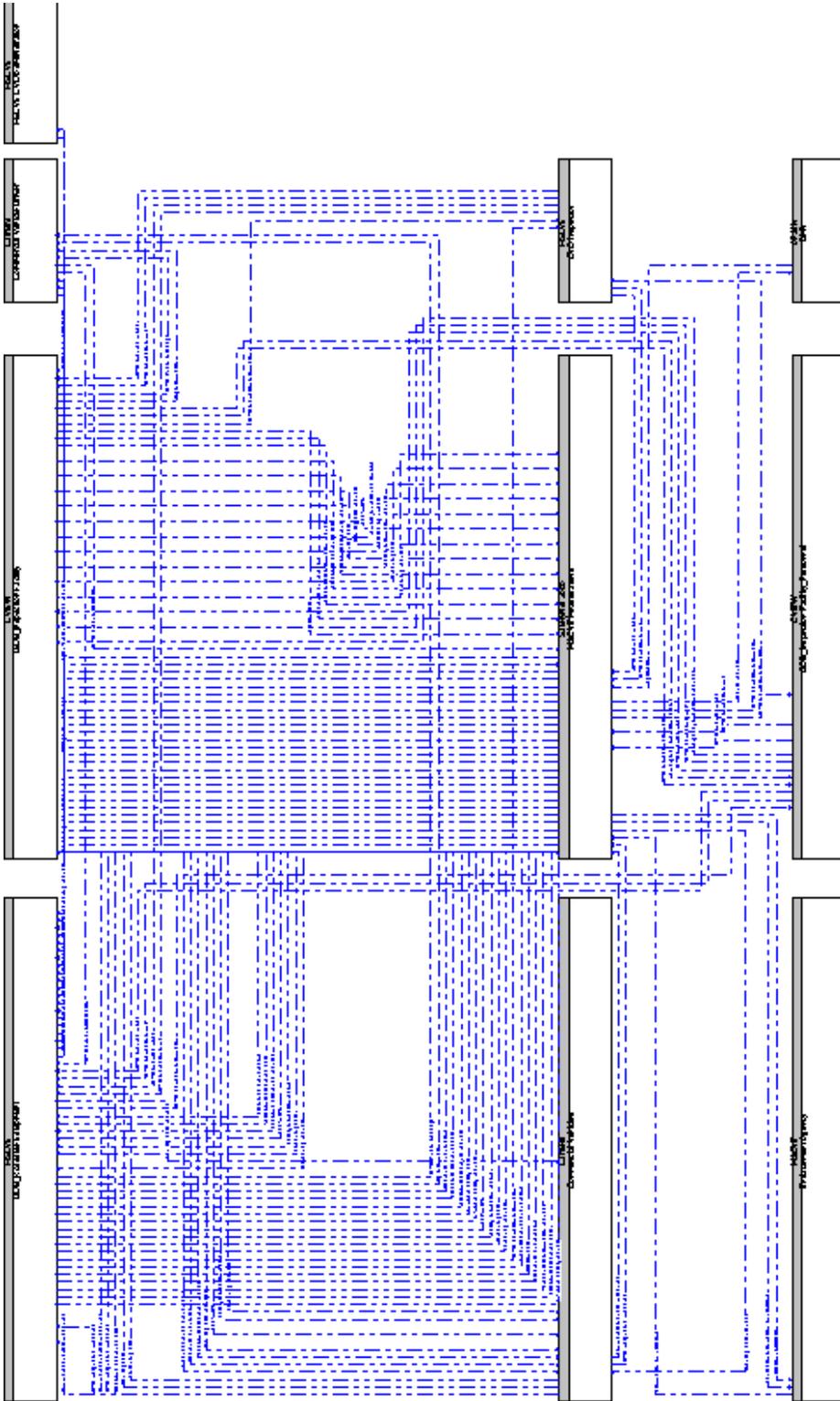
This market package covers automated roadside safety monitoring and reporting. Roadside CVO Safety automates and validates commercial vehicle safety inspections at the Commercial Vehicle Check roadside element. The capabilities for performing the safety inspection are shared between this market package and the On-Board CVO Safety market package, which enables a variety of implementation options. The On-board CVO Safety market package is the responsibility of private industry and will require acceptance by commercial carriers. The basic option, directly supported by the Roadside CVO Safety market package, facilitates safety inspections of vehicles that have been pulled in, perhaps as a result of the automated screening process provided by the Electronic Clearance market package. In this instance, only basic identification data and status information is read from the electronic tag on the commercial vehicle. The identification data from the tag enables access to additional safety data maintained in the infrastructure, which is used to support the safety inspection, and may also influence the pull-in decision if system timing requirements can be met. More advanced implementations, supported by the On-Board CVO Safety market package and installed in the commercial vehicle, could utilize additional vehicle safety monitoring and reporting capabilities to augment the roadside safety check.

Step 5 – Modifying to Address Alaska’s Final Architecture

Figure 7 shows the physical architecture for Alaska’s CVISN program. This figure displays the interconnections between different subsystems and reveals the type of information that will flow between subsystems and terminators. As stated earlier this is *not a design*, but rather the basis from which multiple design approaches can be developed and evaluated. In order to use the architecture for developing design approaches, four (4) different views of the architecture have been created. These views allowed the Alaska CVISN Team to focus on the requirements for a certain set of features of CVISN Level 1. The four (4) centric views that have been created are:

- 1) Alaska’s Physical Architecture
- 2) E-Screening Architecture
- 3) Safety Information Architecture
- 4) Snapshots Architecture

6.5.1 E-Screening Architecture



6..7.1 Snapshot Processing

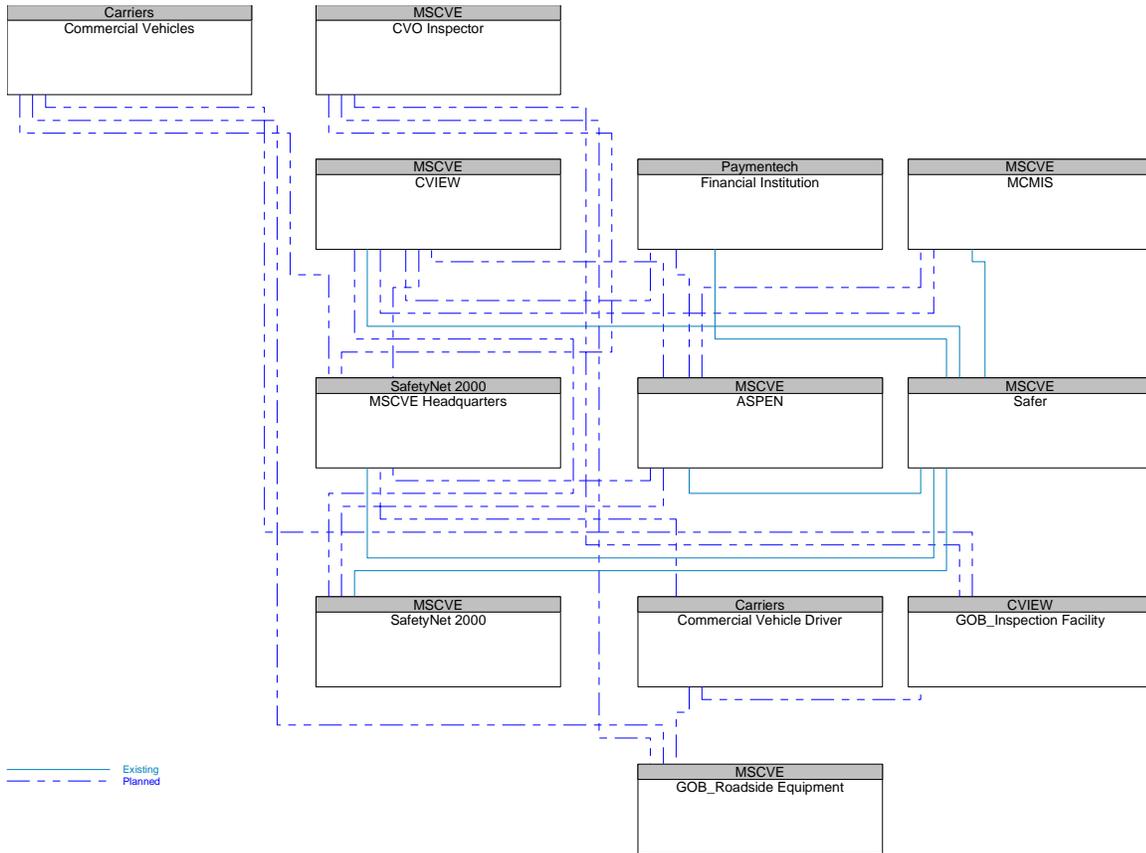


Figure 13: The Alaska Snapshot Processing.

7. SYSTEM DESIGN

This chapter describes Alaska's CVISN system design. Extensive use of the architecture developed in Chapter 6, the COACH Part 4 included in Appendix C and the operational scenarios from Section 9 have been made in developing this design. Alaska's CVISN system will include at least two (2) new systems, CVIEW and a credentialing interface (CI), as well as an enhancement to Alaska's current online registration system, which will allow online CV registration. Alaska will also continue to use EDI interfaces where already implemented and as necessary. The functions of these new systems are described below.

7..1.1 CVIEW

CVIEW, the Commercial Vehicle Information Exchange Window, will provide three main functions in Alaska. First, CVIEW will be used as a mechanism for information sharing between all three CVO administration agencies. Secondly, CVIEW will act as a data accumulator. Data on intrastate carriers and vehicles, Alaska based interstate carriers and vehicle, and eventually drivers will be accumulated in CVIEW. This consolidation will offer a single point of connection between Alaska and the SAFER system. CVIEW will also be used to distribute data to other Alaska information systems for use in electronic screening and online checks of safety and credentials information. It is expected that the CVIEW system deployed by Alaska will be the most recent version provided by the Johns Hopkins University, Applied Physics Laboratory.

7..2.1 Credentialing Interface/Web Cat

A credentialing interface/Web Cat will be developed and maintained by the State of Alaska. The function of this system is to receive and process requests for credentials and registrations. This system will provide a secure interface with existing Alaska systems. The credentialing interface will be extended to connect to the OS/OW permitting system for electronic exchange of information on over weight and over size legal permits.

7..3.1 EDI - Top-Level Design

Alaska's CVISN design makes use of EDI interfaces between existing computer systems as necessary. The information developed to date has been integrated in this section to develop Alaska's top-level design. The discussion that follows parallels the architectural views presented earlier. Table 2 provides a cross-reference between architecture flow names and the identifier used in the design drawings.

Flow Identifier	Flow Name
A1	Activity reports
A2	Carrier to Financial
A3	Citation data
A4	Compliance information
A5	compliance review report
A6	Credential application
A7	credentials and safety information request
A8	credentials and safety information response
A9	Credentials information
A10	credentials information request
A11	CVAS information exchange
A12	CVC override mode
A13	CVO database update
A14	CVO inspector information
A15	CVO inspector input
A16	CVO Pull in Message
A17	electronic credentials
A18	Financial EFT
A19	Information request
A20	payment request
A21	roadside log update
A22	safety information
A23	safety information request
A24	screening data
A25	tax filing, audit data
A26	transaction status
A27	Weigh-in-Motion
A28	OS/OW

The design drawings are presented in the same manner as the architecture drawings; first the entire system is presented followed by the centric views of parts of the system. The design drawings do not show the network that will be used for connecting systems. This information can be obtained from the tables of networks and interfaces included with the Operational Scenarios in Appendix D.

Figure 14 shows the planned CVISN system for Alaska. The architecture flows of earlier sections are included with these interfaces indicating the flow of information moving between systems. Those physical architecture flows will be used in a detailed system design for specifying the logical architecture of the system. The logical architecture which is not part of this document, will define the precise data elements transported between systems via the interfaces defined in Figure 15.

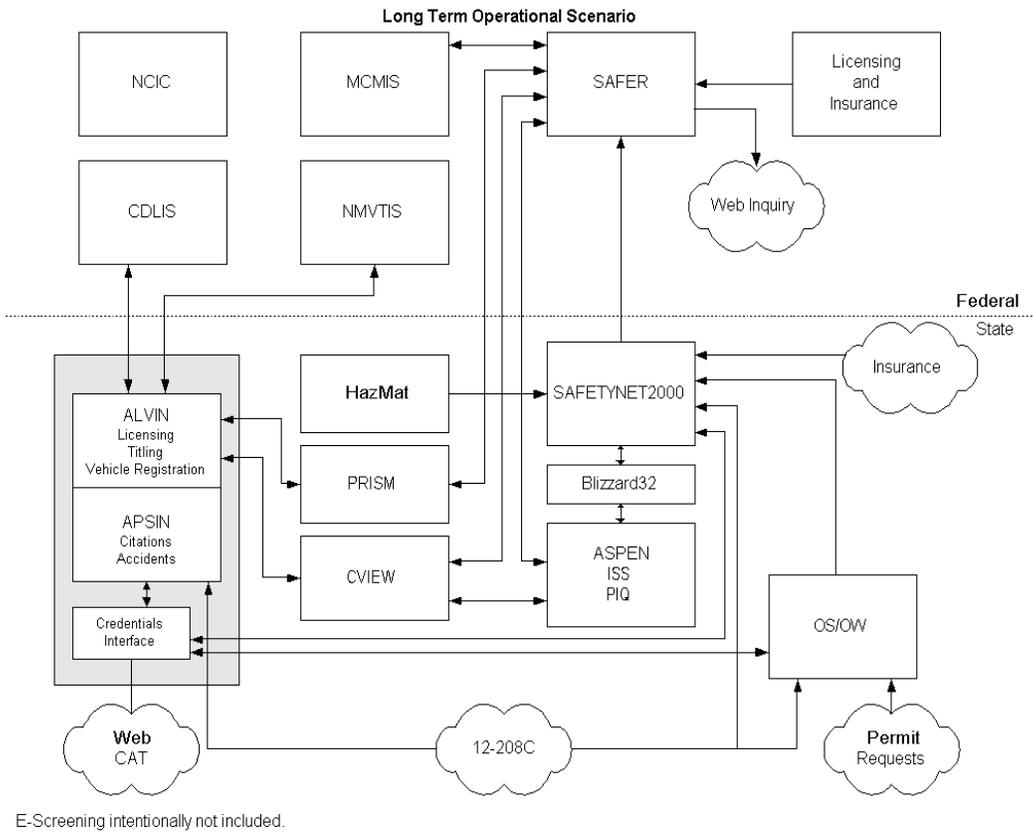
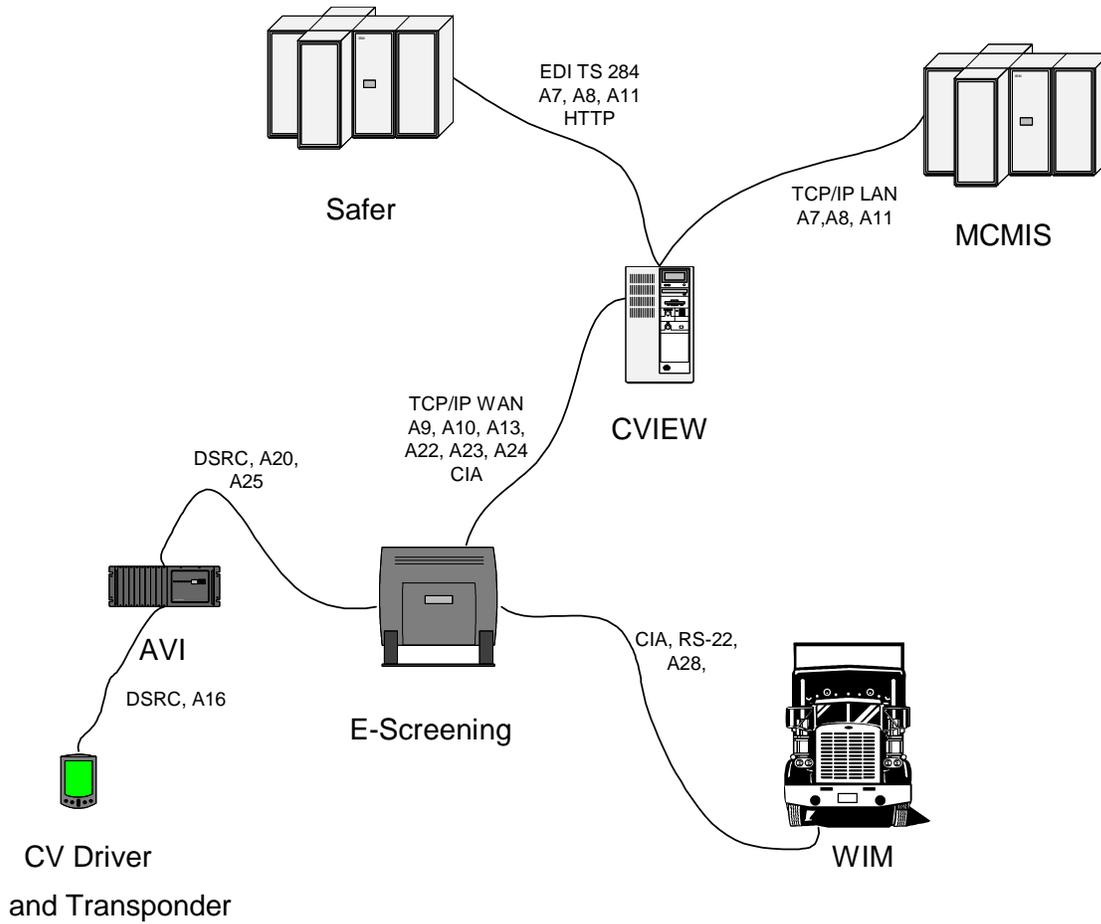


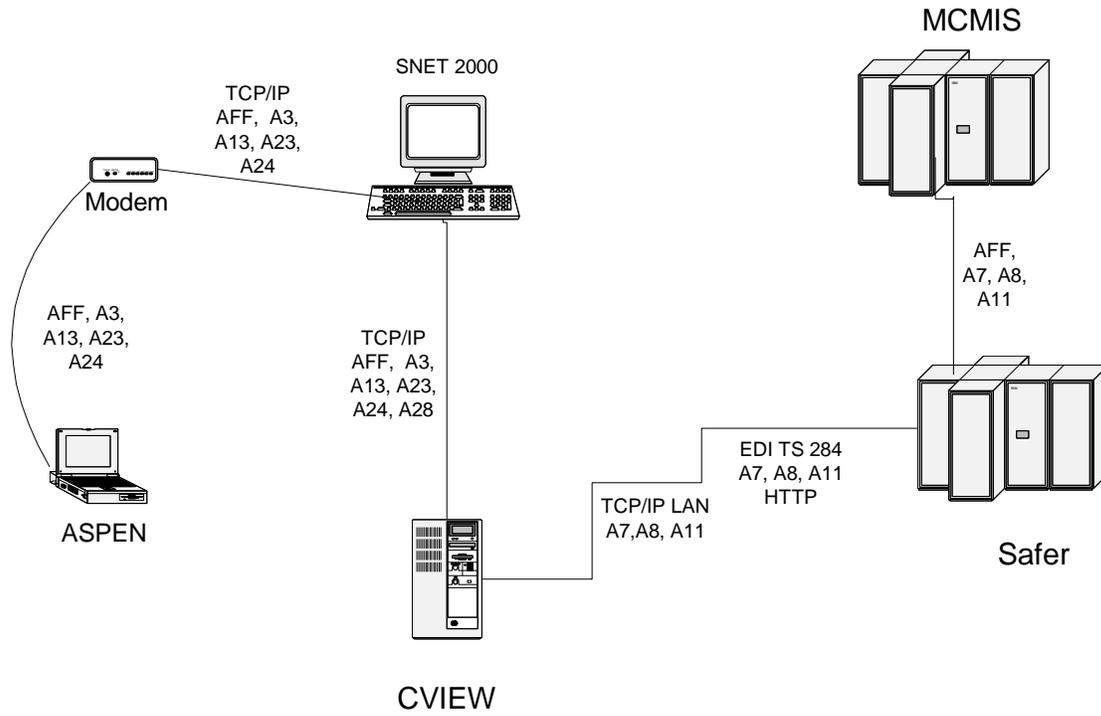
Figure 14. Alaska’s Planned CVISN Program Elements.
Note: Flows are not identified in this diagram

E- screening



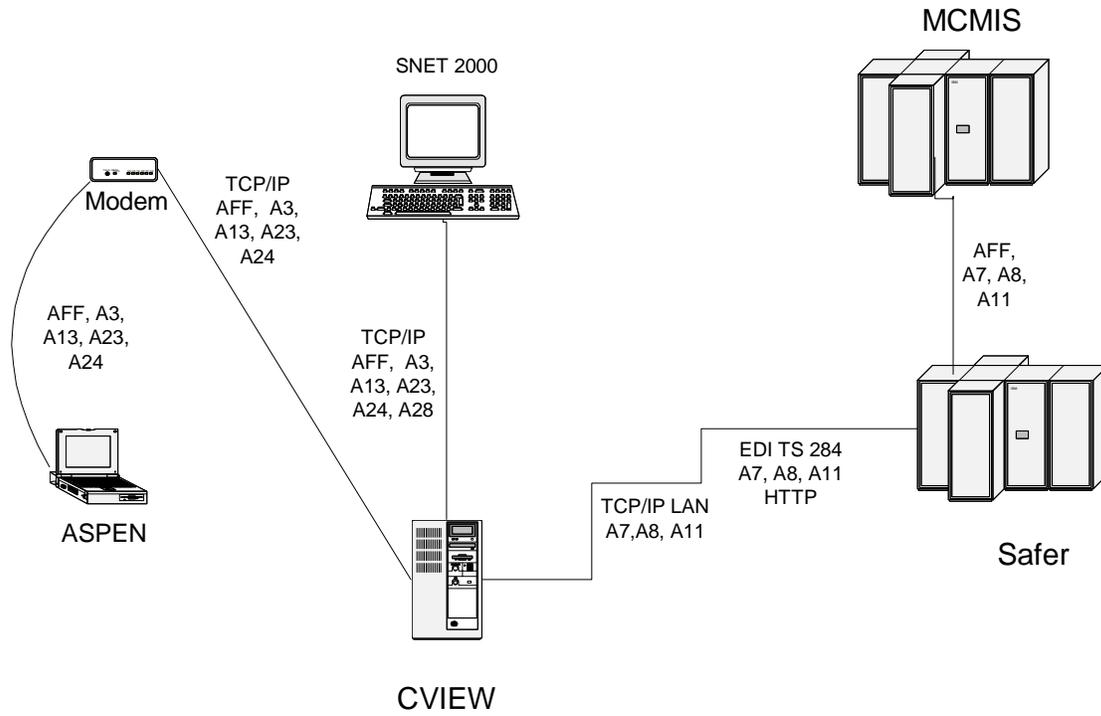
Proposed E-screening Elements

Safety Information Exchange Diagram



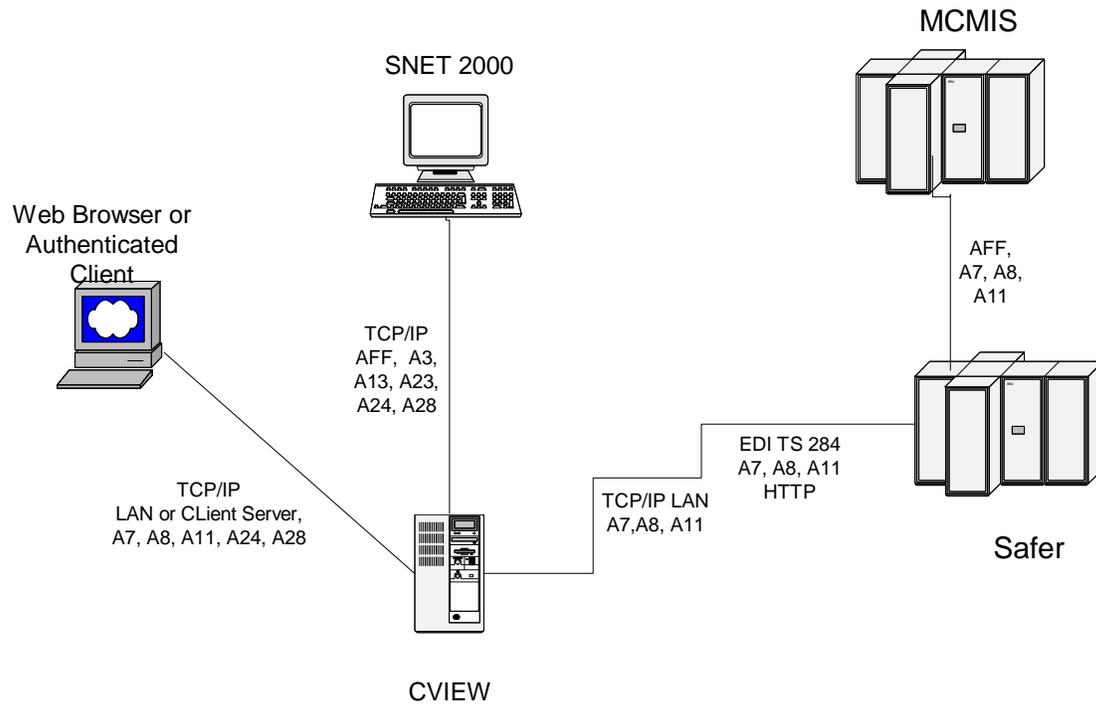
Safety Information Exchange Diagram

Queries for Past Inspection Reports



Queries for Past Inspection Reports

Snapshot Request Processing



Snapshot Processing

8. SYSTEM CHANGE SUMMARIES

This chapter provides a summary of the changes that will be required for existing Alaska CVO administration systems to become CVISN Level 1 compliant. These changes are described in Table 3.

System Name	Function	Changes Required
Aspen System	Inspections	1. Create Alaska CVIEW and use Alaska CVIEW instead of SAFER.
AVI/WIM Roadside Screening System	Electronic Screening	1. Create AVI database download to use CVIEW 285 snapshots instead of extracting from the GOB database. 2. Create roadside screening system to use DSRC message formats in reading transponder IDs and sending clearance messages to transponders.
HAZMAT/Emergency Response	Haz Mat Emergency Response	1. Create and distribute HazMat Information
OS/OW Permit Database system	Collect and Distribute OS/OW Information	1. Create OS/OW Database System
MSCVE Insurance Database	Collect and distribute CV Insurance Information	1. Integrate Insurance Database with SNET 2000
Credential Interface	All functions accepting EDI transactions.	1. Receive EDI transactions from various sources via Internet (FTP), E-Mail. 2. Determine the system which will receive each transaction. Translate the information into the legacy system interface format for that system. 3. Send the transaction to the appropriate system for processing. Add non-priority transactions to an input file for later processing. If a transaction requires immediate response, make a remote procedure call. 4. Receive transactions from legacy systems. Translate them to EDI or other appropriate formats. Send them to the appropriate receiver. Internet FTP or E-Mail.
ASPEN	PIQ and ISS	Decide if Alaska will set system parameters to use CVIEW instead of SAFER

9. OPERATIONAL SCENARIOS

Alaska's Operational scenarios are listed below and included in Appendix D.

1. E-screening
2. Safety Information Exchange
3. Queries for Part Inspections
4. Snap Shot Processing

10. ALASKAN ISSUES

Alaska has a number of issues that require resolution before full CVISN Level 1 planning and status can be achieved. These issues are addressed individually below.

- 1) *IFTA and IRP Data Exchange*: When IFTA and IRP were established, Alaska was exempted from participation due to the very low numbers of vehicles that would be traveling from other states into and out of Alaska. In later years, when Alaska explored the idea of joining these organizations, the state was told that it should not participate because it would not be cost effective. The concern that Alaska has with this situation is that there will be some type of data from IFTA or IRP that is incorporated into SAFER/CVIEW snapshots. Alaska must determine a way to get that IFTA/IRP type of data into its CVIEW and ultimately into SAFER and/or MCMIS for sharing with other states. That data must be defined early in this process so that Alaska can determine where and how this data will be collected and stored in the Alaska CVIEW. For example, Alaska does not currently record a carrier's FEIN. If that number is to become a part of the carrier snapshot and is being supplied from an IFTA or IRP Clearinghouse, Alaska must design its credentialing systems and CVIEW with a capability to extract that number and forward it to SAFER for inclusion on the snapshots that would be available to other states. It is critical that these types of issues be understood before new systems are developed in the state.
- 2) *Heavy Vehicle Use Tax (Form 2290)*: Currently, Alaska has electronic credentialing for state motor vehicles, but commercial vehicles that are required to file and pay a heavy vehicle use tax to the federal government are not eligible to use the electronic filing. This is because there is currently no way for the state to electronically verify the payment of this tax with the federal IRS. Currently, carriers must physically show their paper receipt to Alaskan authorities to complete their registration process. This requires a face-to-face system. Also, Alaska will not accept the responsibility of collecting these taxes and forwarding the payments on to the IRS, as some states have agreed to do. The IRS must develop a procedure to allow electronic verification of the payment of these taxes. Alaska's vehicle registration system can be adapted to accommodate commercial vehicles if a procedure is established to verify the payment of these taxes. That is the only thing holding Alaska back from creating this electronic credentialing environment.
- 3) *DMV Issue*: presently cannot register any vehicle that has a registration value over \$1000. Will need to address this limit before electronic CV credentialing is enabled.
- 4) *Status of EDI Requirements for SAFER/CVIEW Interface*: Alaska remains committed to meeting the EDI standards established by FMCSA for connectivity to national systems. However, Alaska is exploring the use of some of the newer technologies and procedures, such as XML, for the newer systems that Alaska will create for internal uses. Alaska needs to verify what standards have been established for

communications between the states' CVIEW systems and SAFER. This must be known as Alaska begins the system specifications for its CVIEW. While Alaska plans to utilize as much as possible the Oracle-based CVIEW developed by JHU, it is clear that there will be Alaska-unique aspects that must be incorporated into the Alaska CVIEW.

- 5) CDLIS. CDLIS does not feed MCMIS or other systems. It is merely a pointer system and just points to the state that has the information requested.
- 6) CVIEW: what will the CVIEW snapshot look like? What data fields? CVIEW decisions to be made. Need to decide what Alaska needs in its CVIEW to deny or approve credentials before can proceed
- 7) SNET and CVIEW are not scheduled to interface, so any redundant data will have to be feed to both systems. Right now, MCMIS only updates the carrier based records to Safer weekly. This will not necessarily work for Alaska. Alaska inspectors in the field will need to know when OOS's are generated ASAP and get this data to inspectors and third party inspectors.
- 8) Are the federal identifier standards used by DMV the same as the identifiers used in the national architecture?
- 9) Transponders: issued with registration? State pays? Need strategy and decision
- 10) IBC - International Border Crossing Architecture will be part of the Complete CVISN deployment but what part does Alaska need to include in the top level design document?
- 11) What rules and procedures will govern the viewing of data collected by Alaska systems? How will Alaska meet the Fair Information Principles for ITSCVO, Reference 13 that says stakeholders will be included in discussions of techniques to be used to implement the principles?
- 12) Initiate US DOT number issuance; procure formal authority from Pat Savage at MCMIS
- 13) Convert present AK dot numbers holders to US DOT numbers?
- 14) Determine technologies for VMS, RF, AVI
- 15) HVUT 2290; related to earlier CV electronic credentialing issues
- 16) Status of EDI requirements for update interfaces
- 17) Get authority to revoke or deny registration based upon safety fitness; propose and pass legislation (PRISM)

- 18) Modify Web site for CMV credentials
- 19) Incorporate HAZMAT into central CVISN/CVIEW design
- 20) Move HAZMAT collection authority to MSCVE
- 21) Obtain federal exemption to install EDI interface for WEB Cat due to small size of Alaska carriers and undue financial burden imposed by EDI implementation
- 22) Determine nature and type of legacy system interfaces needed for main frames, install
- 23) Finalize ASPEN deployment and methodology to expand to third party
- 24) Address and solve third party laptop installation, training and support issues
- 25) Adopt Prism: for grant money and US DOT # connection to ALVIN; maybe FEIN also and other data fields required for IFTA and IRP data harmonization
- 26) Justify strategy to run CV Oracle databases in Anchorage
- 27) Set up CAPRI to SNET 2000 Link in drawings
- 28) Determine what data is available to special commissioned officers/Alaskan Inspectors from NCIC and CDLIS and how it can be accessed/deployed/routed
- 29) Explore access to the federal licensing and insurance database
- 30) DPS does not maintain crash data in ASPEN
- 31) Craft plan with partners to identify and exhibit benefits of transponders
- 32) Add carrier terminal ID to CVISN design
- 33) Explore operating agreements with NORPASS and/or PREPASS
- 34) Get copy of IFTA and IRP exemptions from DMV/Carl Springer
- 35) 3/28/00 CVISN meeting with Sharon Smith at 269-5050 – Alaska needs a memo from feds granting Alaska approval to us the Task order system for federal money
- 36) Develop system/interface top broadcast OOS and other critical information to all inspectors, statewide and create associated SOP's.

Appendix A - COACH PART 1

**Intelligent Transportation
Systems (ITS)
Commercial Vehicle Operations (CVO)**

**CVISN Operational and Architectural
Compatibility Handbook (COACH)
Part 1
Operational Concept and Top-Level Design Checklists**

Baseline Version

POR-97-7067 V1.0

This is a Baseline Issue

This document has completed internal and external reviews of previously published drafts and preliminary versions. All comments received to date have been incorporated or addressed.

Note: This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from the JHU/APL CVISN site on the World Wide Web. The electronic version of the glossary features hypertext links to the definitions. All updates to this glossary will be maintained and published on that site; hardcopies of future versions will not be distributed. The URL for the CVISN site is: <http://www.jhuapl.edu/cvisn/>

Additional review and comments to this document are welcome.

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Change Summary:

Version V1.0 of the document incorporates revisions related to these change reports:

- 970116 (stakeholder view, system names, flows associated with inspection reporting)
- 970303 (capability names)
- 970307 (add intrastate vehicle registration where missing)
- 970312 - A baseline update of design drawings to incorporate comments received from stakeholders and the CVISN technical team. Additional top-level design information has also been added.
- 970710 - Change groupings on Stakeholder View; add Treasury
- CRF 220 - Change inspection reporting/retrieval paths & methods
- CRF 285 - Add WebCAT, remove Safety Information System; change CAT to Credentialing System (e.g., CAT)
- CRF 311 - Clarify ITS/CVO versus CVISN Architecture
- CRF 493 - Update COACH Part 1 Chapter 4
- CRF 356 - Modifies the way intrastate inspections are reported
- CRF 529 - Add Electronic Screening Enrollment to the design
- CRF 530 - Add Licensing & Insurance, RSPA HazMat, SSRS; remove UCR
- CRF 548 - Primary Carrier ID
- CRF 549 - Transponder ID
- CRF 564 – Update COACH Part 1 Chapters 1, 3, 5-8

CVISN Operational and Architectural Compatibility Handbook (COACH) Part 1 - Operational Concept and Top-Level Design Checklists

Introduction

The CVISN Operational and Architectural Compatibility Handbook (COACH) provides a comprehensive checklist of what is required to conform with the Commercial Vehicle Information Systems and Networks (CVISN) operational concepts and architecture. It is intended for use by state agencies with a motor carrier regulatory function and by motor carriers. It is also intended to provide a quick reference for developers of CVISN Core Infrastructure systems.

Reference 1, the CVISN Glossary, contains an acronym list as well as brief descriptions of many commonly used terms.

COACH Structure

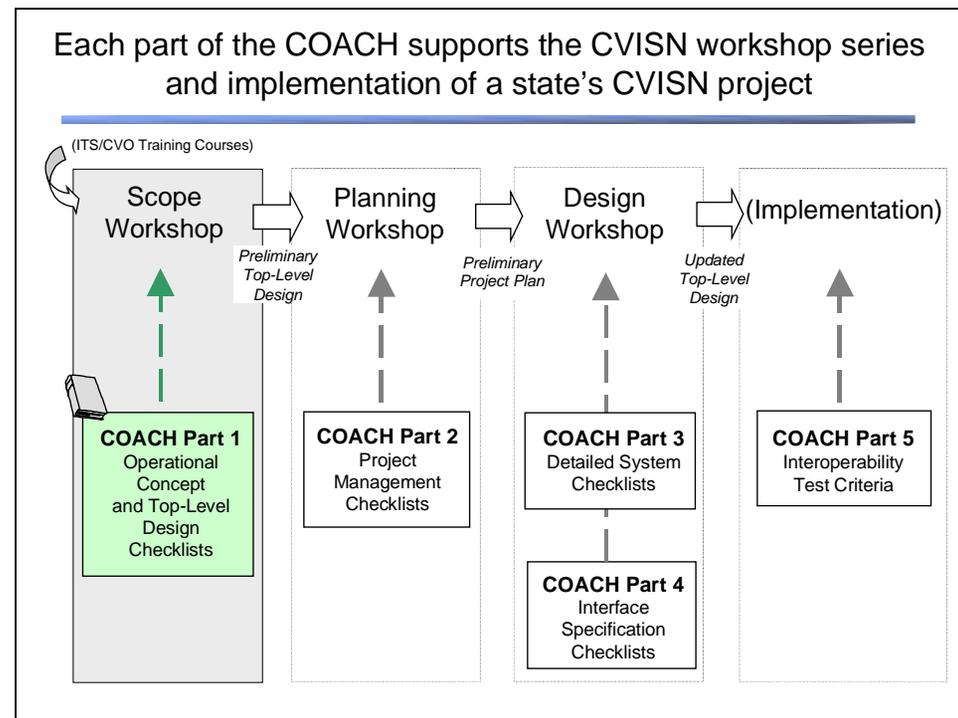
The COACH is divided into 5 parts:

Part 1 - Operational Concept and Top-Level Design Checklists

- Part 2 - Project Management Checklists
- Part 3 - Detailed System Checklists
- Part 4 - Interface Specification Checklists
- Part 5 - Interoperability Test Criteria

This is the third revision to the COACH Part 1 [see References 2 and 3 for earlier versions]. Parts 2 [Reference 4], and 5 [Reference 7] are available in preliminary form at the Browse and Download Documentation; Architecture section of the JHU/APL CVISN web site <http://www.jhuapl.edu/cvo/>. Initial versions of Parts 3 [Reference 5] and 4 [Reference 6] will be published in 1999.

Figure C-1 The COACH supports the workshops



COACH Part 1 Description

This is Part 1. Part 1 includes several types of checklists related to operational concepts and top-level design:

- Guiding Principles: high level strategic guidelines [Chapter 2]
- Operational Concepts Checklists: compatibility requirements for processes [Chapter 3]
- State Institutional Framework Checklists: compatibility requirements for the policies and coordinating activities for states [Chapter 4]
- CVISN Top-level Design Checklists: top-level compatibility requirements for state and carrier system designs. For the CVISN Core Infrastructure systems, the checklists show the planned capabilities, and provide a place for states to indicate which capabilities they intend to utilize. [Chapters 5 , 6 and 7]

The COACH Part 1 checklists are intended to be used to indicate the scope and depth of CVISN commitment, and to provide a mechanism for planning development and test activities. Each state should maintain a filled-in master copy of the COACH.

COACH Heritage

The first versions of this part of the COACH [References 2 and 3] were derived from other CVISN technical documents:

- Introduction to CVISN [Reference 8]
- CVISN Operational Concept Document [Reference 9]
- CVISN Architecture Specification [Reference 10]
- CVISN System Design Description [Reference 11]

Only the last document in that list is still being maintained. The other documents have been replaced with some of the volumes in the CVISN Guide series. Technical guidance about CVISN is now provided in:

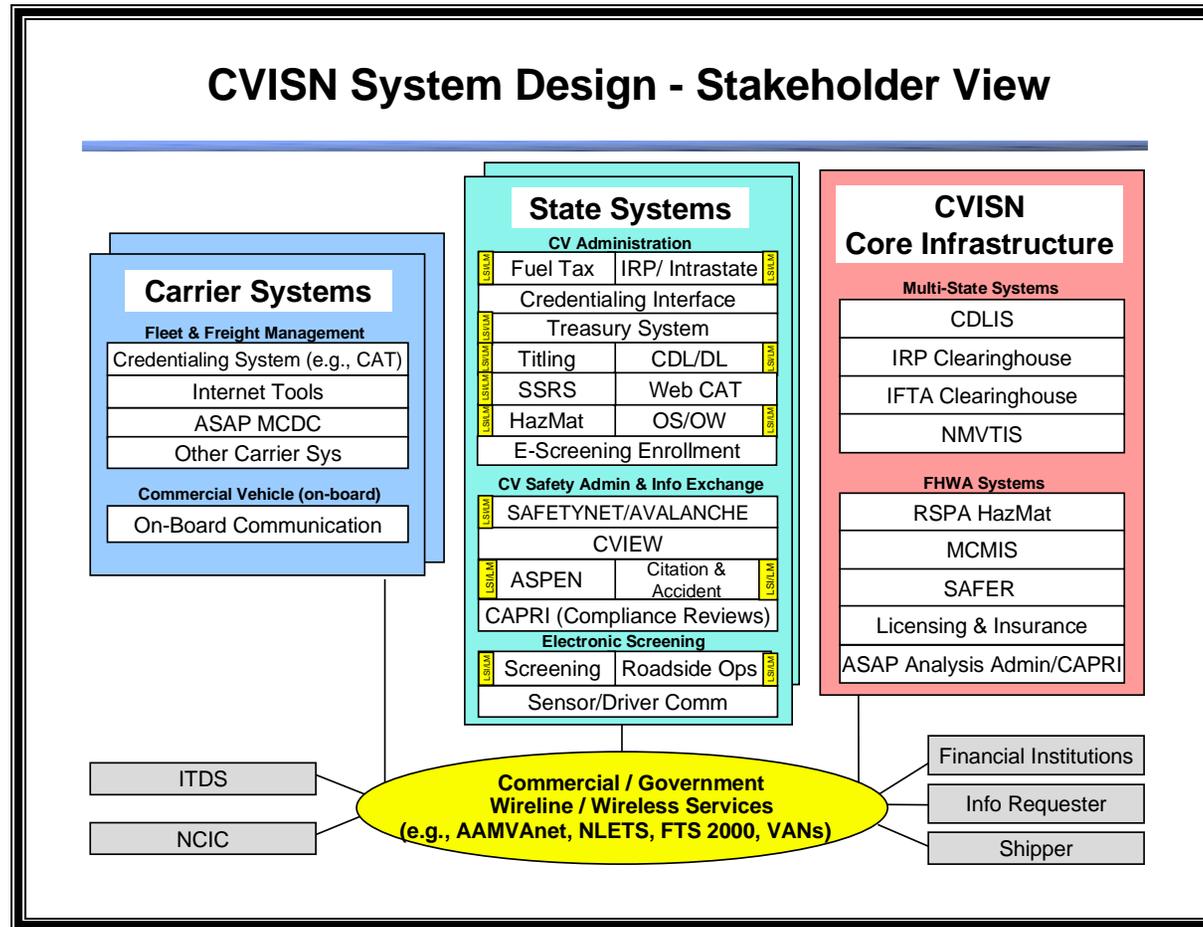
- The CVISN General and Technical Guides
 - Introductory Guide to CVISN [Reference 12]
 - CVISN Guide to Top-Level Design [Reference 13]
 - CVISN Guide to Safety Information Exchange [Reference 14]
 - CVISN Guide to Credentials Administration [Reference 15]
 - CVISN Guide to Electronic Screening [Reference 16]

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- Other volumes of the COACH [Reference 4-7]
 - CVISN System Design Description [Reference 11]
 - Electronic Data Interchange standards and implementation guides [References 25, 27-31]
 - Dedicated Short-Range Communications standards [References 32-34]

CVISN System Design

The figure below depicts the CVISN System Design - Stakeholder View. Chapters 5, 6, and 7 of this document focus on the three major groups of systems (State, CVISN Core Infrastructure, Carrier). For a brief description of each system shown on this figure, see the CVISN System Design Description [Reference 11].

Figure C-2 CVISN System Design - Stakeholder View



How States Should Use This Document

The COACH summarizes key concepts and architectural guidelines for CVISN. The COACH focuses on topics important to states. The COACH Part 1 defines the CVISN Level 1 criteria.

To gain a more complete understanding of CVISN, state planners and designers should read the Introductory Guide to CVISN [Reference 12], other parts of the COACH [References 4-7], and the CVISN System Design Description [Reference 11]. This version of the COACH Part 1 is intended to be a working document that is used for setting requirements for modifications and enhancements to existing state systems, and for planning the development of new systems in states. This document will be used first in the planned CVISN Scope workshop.

The key concepts and architectural guidelines for CVISN states have been summarized in this document in a series of checklist tables. Each table in this document consists of these columns, unless otherwise noted:

- Commit Level (F/P/N) – the state’s commitment level to the item
Using the first column of each checklist entry, a **commitment level should be filled in** by the state. There are three possible levels of commitment:
 - (F) This rating indicates a full commitment. This level means that at least 80% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist item statement.
 - (P) This rating indicates a partial commitment. This level means that between 50% and 80% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist item statement.
 - (N) This rating indicates no commitment. This level means that less than 50% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist statement.

- Item # (chapters 5-7 only) – a label to identify each row in the table.

- Compatibility Criteria - summary versions of operational concepts or architectural guidelines, culled from other CVISN documentation. For CVISN Core Infrastructure systems in Chapter 7, this column is called Planned Capabilities.

- Req Level - the compatibility requirement level assigned to this compatibility criterion by the FHWA CVISN project team
For a state to be “compatible with CVISN,” it must implement selected items in the checklists. To distinguish those items, the CVISN project team has assigned a **compatibility requirement level** to each checklist item:
 - (L1) This rating identifies a CVISN Level 1 compatibility requirement.
 - (E) This rating indicates an enhanced level of CVISN capability. These items may require a little longer to complete (3-4 years).
 - (C) This rating indicates a complete level of CVISN capability. Satisfying all these provides complete CVISN compatibility. These items are expected to require a longer-range (5 or more years) time frame.

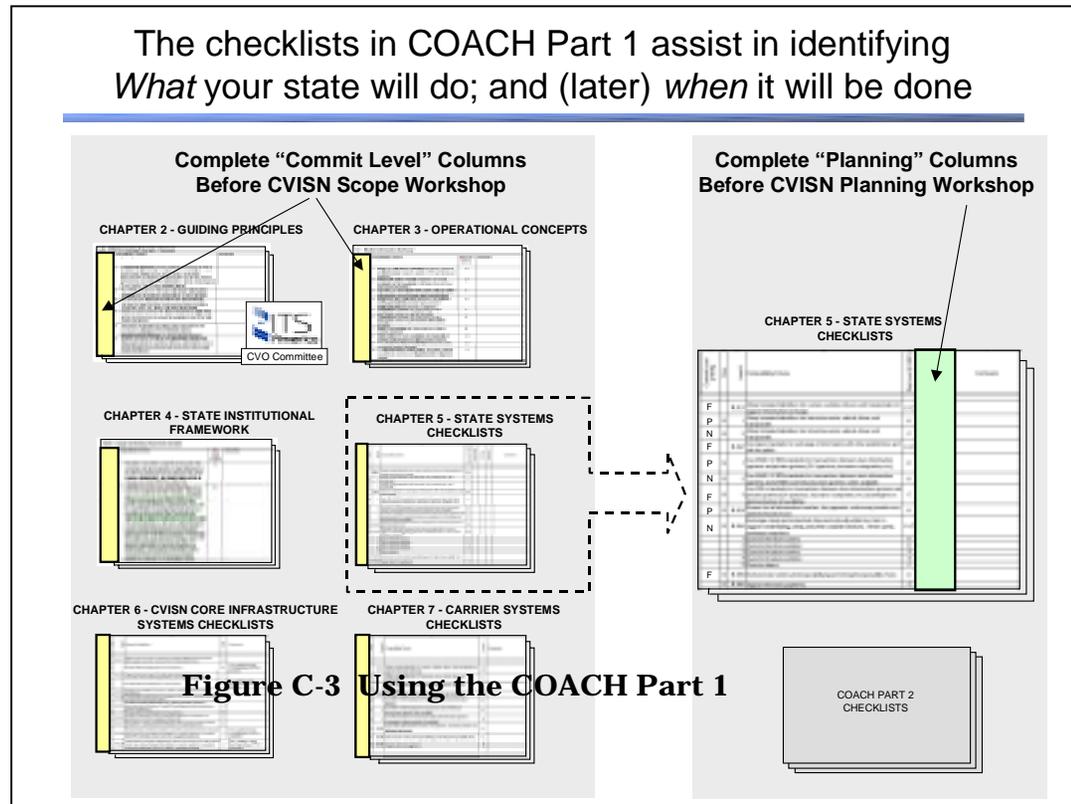
States are expected to focus initially on checklist items with an *L1* compatibility requirement level rating. Making a *partial commitment* indicates that the state will at least demonstrate the feasibility of that concept or architectural guideline. Making a

full commitment indicates that the state will fully implement the concept or architectural guideline and be ready for the next steps.

- Op Test Date (chapter 5 only) - to be used for planning/tracking by the owner of a particular copy of the document; indicates when the criterion is to be (has been) operationally tested (op test); may refer to a milestone by name rather than a specific date; if plans change, this column should be updated accordingly
- IOC Date (chapter 5 only) - to be used for planning/tracking by the owner of a particular copy of the document; indicates when initial operating capability (IOC) for the criterion is to be (has been) achieved; may refer to a milestone by name rather than a specific date; if plans change, this column should be updated accordingly
- FOC Date (chapter 5 only) - to be used for planning/tracking by the owner of a particular copy of the document; indicates when final operating capability (FOC) for the criterion is to be (has been) achieved; may refer to a milestone by name rather than a specific date; if plans change, this column should be updated accordingly
- Comments – available for the state to refer to another document or plan, note a question, record a clarifying comment, etc.

If the state maintains its master copy of this document electronically, the following conventions are recommended when filling in the columns to illustrate the “firmness” of the state’s plan:

- *Italics type* : Tentative, not approved by the final decision makers
- Regular type : Approved by the decision makers (or supported by consensus)
- **Bold type** : Completed



States are to fill out the “Commit Level” column for the tables in chapters 2 (Guiding Principles), 3 (Operational Concepts), 4 (State Institutional Framework), 5 (State Systems Checklists), and 6 (CVISN Core Infrastructure Systems Checklists) prior to attending the CVISN Scope Workshop. Since the first workshop focuses on *what* the states will do rather than *when* those actions will be scheduled, it is not necessary to complete the planning columns (Op Test Date, IOC Date, FOC Date) for the CVISN Scope Workshop. The remainder of the tables will be completed as the project progresses.

Guiding Principles

Statements of principle are being used to document fundamental concepts and guidelines supported by the CVO community. In addition to the specific checklists provided in subsequent sections, these guiding principles provide a top-level checklist of fundamental guidelines for all CVISN activities. CVO stakeholders should ensure that their actions are consistent with these principles. No planning columns are included in the tables for guiding principles since the principles provide guidance rather than specific details that can be scheduled or measured.

The guiding principles were developed under the auspices of the ITS America CVO Program Subcommittee [References 17, 18, 19]. These principles continue to be under review by ITS America and the US Department of Transportation. They will be updated as required to reflect the consensus of the CVO community. The current principles are copied verbatim into the tables in this chapter.

ITS/CVO Guiding Principles [Reference 17]

“The ITS America CVO Committee presents this set of guiding principles which will guide the states and federal government on matters concerning technology and commercial vehicle operations. This list of 39 guiding principles was established by the CVO Programs Subcommittee with representation from National Private Truck Council, ATA, carriers, owner operators, motor coach representation, UPS, several state administrative and regulatory agencies, AAMVA, AASHTO, and Canada. These principles took two years to create and 100% consensus was reached.

ITS/CVO Guiding Principles: Summary

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. A balanced approach involving ITS/CVO technology as well as institutional changes will be used to achieve measurable improvements in efficiency and effectiveness for carriers, drivers, governments, and other CVO stakeholders. Specific technology and process choices will be largely market-driven .	
F	2. The CVISN architecture will enable electronic information exchange among authorized stakeholders via open standards.	
F	3. The architecture deployment will evolve incrementally , starting with legacy systems where practical and proceeding in manageable steps with heavy end-user involvement .	

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	4. Safety assurance activities will focus resources on high risks , and be structured so as to reduce the compliance costs of low-risk carriers and drivers.	
P	5. Information technology will support improved practices and procedures to improve CVO credential and tax administration efficiency for carriers and government.	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	6. Roadside operations will focus on eliminating unsafe and illegal operations by carriers, drivers, and vehicles without undue hindrance to productivity and efficiency of safe and legal carriers and drivers.	

ITS/CVO Guiding Principles: General CVO

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. To the extent possible, ITS/CVO technology development and deployment will be market-driven . The federal role in ITS deployment will be limited to instances in which a government role is indispensable and in which the technology is proven and reliable.	
F	2. Investment and participation in ITS/CVO technology will be voluntary .	
F	3. The relative benefits of various ITS/CVO technology applications and investments will be assessed quantitatively using measures of effectiveness and established methods of quality control.	
F	4. Potential ITS/CVO technology applications will be evaluated against regulatory choices involving low-technology and non-technological options to ensure applications are cost-effective for both government and industry .	
F	5. Government CVO policies and regulatory practices will permit safe and legal carriers and drivers to operate without unnecessary regulatory and administrative burdens .	
F	6. Stakeholders will use technology and institutional reform to implement continuous process improvement and cost-effective process re-engineering.	
F	7. The confidentiality of proprietary and other sensitive stakeholder information will be preserved.	
F	8. The United States CVO community will work to implement compatible policies and architecture and interoperable systems in all states.	
F	9. The United States CVO community will work with those in Canada, Mexico, and other nations to encourage compatible policies and architecture and to implement interoperable systems throughout North America and, when possible, worldwide.	

ITS/CVO Guiding Principles: CVISN Architecture

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. The CVISN architecture will be open , modular, and adaptable.	
F	2. The architecture will enable data exchange among systems, a key to reaching CVO objectives. Methods used to exchange data will ensure data integrity and prevent unauthorized access .	
F	3. Data exchange will be achieved primarily via common data definitions , message formats, and communication protocols. These enable development of interoperable systems by independent parties.	
F	4. A jurisdiction shall have and maintain ownership of any data collected by any agent on its behalf.	
F	5. The architecture will accommodate existing and near-term communications technologies.	
F	6. The architecture will accommodate proven technologies and legacy systems whenever possible.	
F	7. The CVISN architecture will allow government and industry a broad range of options , open to competitive markets, in CVO technologies.	

ITS/CVO Guiding Principles: CVISN Deployment

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. The feasibility of the architecture will be demonstrated incrementally in simulations, prototypes, operational tests, and pilots. There will be heavy end-user involvement in each step of the process.	
F	2. After feasibility has been demonstrated, key architectural elements will be incorporated into appropriate national and international standards .	
F	3. The architecture deployment will evolve incrementally , starting with legacy systems where practical and proceeding in manageable steps.	
F	4. Strong federal leadership will foster voluntary cooperative efforts within government jurisdictions and among groups of other stakeholders to develop systems which are in accord with the architecture.	

ITS/CVO Guiding Principles: Safety Assurance

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. Carriers and drivers will be responsible for the safe and legal operation of commercial vehicles.	
F	2. Jurisdictions will develop and implement uniform standards, practices, procedures, and education programs to improve safety. These activities will leverage market forces that encourage safety.	
F	3. Jurisdictions will focus safety enforcement resources on high risk carriers and drivers. They will remove chronic poor performers from operation and help cooperative marginal performers to improve.	
F	4. Jurisdictions will conduct inspections and audits to provide incentives for carriers and drivers to improve poor performance and to collect information for assessing carrier and driver performance.	
F	5. Jurisdictions will use a safety risk rating for all carriers based on best available information and common criteria.	
F	6. Jurisdictions will identify high risk drivers based on best available information and common criteria.	
F	7. Safety programs will provide benefits which exceed costs for carriers and drivers as well as governments.	

ITS/CVO Guiding Principles: Credentials & Tax

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. Electronic information will be used in place of paper documents for the administration of CVO credential and tax requirements.	
F	2. Authorized users will be able to electronically exchange credential and tax-related information and funds via open standards and transmission options.	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
P	3. The information needed to administer tax and credential programs involving carriers, drivers, and vehicles will be available to authorized officials , on a need-to-know basis.	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	4. Individual jurisdictions, or their designated agent, will be the authoritative source of information on credentials they issue.	

ITS/CVO Guiding Principles: Roadside Operations

Commit Level (F/P/N)	Compatibility Criteria	Comments

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	1. Roadside operations will focus on eliminating unsafe and illegal operations by carriers, drivers, and vehicles and will be designed and administered to accomplish this in a manner that does not unduly hinder the productivity and efficiency of safe and legal motor carriers and drivers.	
F	2. Jurisdictions will support CVO roadside operations programs with timely, current, accurate, and verifiable electronic information , making it unnecessary for properly equipped vehicles to carry paper credentials.”	

Fair Information Principles for ITS/CVO [Reference 18]

These fair information principles were prepared in recognition of the importance of protecting individual privacy in implementing Intelligent Transportation Systems (ITS) for Commercial Vehicle Operations (CVO). They have been adopted by the ITS America CVO Technical Committee.

These principles represent values and are designed to be flexible and durable to accommodate a broad scope of technological, social, and cultural change. ITS America may, however, need to revisit them periodically to assure their applicability and effectiveness.

These principles are advisory, intended to educate and guide transportation professionals, policy-makers, and the public as they develop fair information and privacy guidelines for specific ITS/CVO projects. They are not intended to supersede existing statutes or regulations. Initiators of ITS/CVO projects are urged to publish the fair information principles that they intend to follow. Parties to ITS/CVO projects are urged to include enforceable provisions for safeguarding privacy in their contracts and agreements.

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<u>FIP #1: Privacy</u> The reasonable expectation of privacy regarding access to and use of personal information should be assured. The parties must be reasonable in collecting data and protecting the confidentiality of that data.	
F	<u>FIP #2: Integrity</u> Information should be protected from improper alteration or improper destruction.	
F	<u>FIP #3: Quality</u> Information shall be accurate, up-to-date, and relevant for the purposes for which it is provided and used.	
F	<u>FIP #4: Minimization</u> Only the minimum amount of relevant information necessary for ITS applications shall be collected; data shall be retained for the minimum possible amount of time.	
F	<u>FIP #5: Accountability</u> Access to data shall be controlled and tracked; civil and criminal sanctions should be imposed for improper access, manipulation, or disclosure, as well as for knowledge of such actions by others.	Authentication Software
F	<u>FIP #6: Visibility</u> There shall be disclosure to the information providers of what data are being collected, how they are collected, who has access to the data, and how the data will be used.	
F	<u>FIP #7: Anonymity</u> Data shall not be collected with individual driver identifying information, to the extent possible.	
F	<u>FIP #8: Design</u> Security should be designed into systems from the beginning, at a system architecture level.	

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<u>FIP #9: Technology</u> Data encryption and other security technologies shall be used to make data worthless to unauthorized users.	
F	<u>FIP #10: Use</u> Data collected through ITS applications should be used only for the purposes that were publicly disclosed.	
F	<u>FIP #11: Secondary Use</u> Data collected by the private sector for its own purposes through a voluntary investment in technology should not be used for enforcement purposes without the carrier's consent.	

Interoperability Guiding Principles: General

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<u>IGP #1</u> The CVO community will work to implement interoperable ITS/CVO systems in all United States jurisdictions.	
F	<u>IGP #2</u> The CVO community will work with the CVO communities in Canada and Mexico to implement interoperable ITS/CVO systems throughout North America.	
F	<u>IGP #3</u> The CVO community will work to ensure that ITS/CVO systems, where appropriate, are interoperable with other ITS systems (e.g., electronic toll systems).	
F	<u>IGP #4</u> Interoperable ITS/CVO systems will be achieved through the development, adoption, and adherence to common standards for hardware, systems/software, operations, and program administration.	
F	<u>IGP #5</u> Each jurisdiction will support the national ITS/CVO information system architecture and data exchange standards developed under the Commercial Vehicle Information Systems and Networks (CVISN) program.	
F	<u>IGP #6</u> Transponders shall have a unique identifier.	

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<p><u>IGP #7</u> Information systems supporting electronic screening, credentials administration, and safety assurance will use:</p> <p>7a. US DOT numbers for the identification of both interstate and intrastate motor carriers.</p> <p>7b. Commercial Drivers License (CDL) numbers for the identification of commercial drivers.</p> <p>7c. Vehicle Identification Numbers (VIN) and license plate numbers for the identification of power units.</p>	

ITS/CVO Interoperability Guiding Principles: Hardware

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<p><u>IGP #8</u> Commercial vehicle operators will be able to use one transponder for power unit-to-roadside communications in support of multiple applications including electronic screening, safety assurance, fleet and asset management, tolls, parking, and other transaction processes.</p>	
F	<p><u>IGP #9</u> Public and public-private DSRC applications will support open standards that are consistent with the national ITS architecture.</p>	

ITS/CVO Interoperability Guiding Principles: Systems/Software

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<p><u>IGP #10</u> Public and public-private organizations will support open data exchange standards for the state-state, state-federal, state-provincial, and carrier-agency exchange of safety and credentials information as described in the national ITS architecture.</p>	

ITS/CVO Interoperability Guiding Principles: Operations

Commit Level (F/P/N)	Compatibility Criteria	Comments
F	<u>IGP #11</u> Jurisdictions will support common standards for placement of DSRC transponders on trucks and buses to ensure the safe and cost-effective use of transponders.	
F	<u>IGP #12</u> Jurisdictions will support a common set of recommended practices concerning the selection, layout, and signage of roadside screening sites (i.e., weigh stations, ports-of-entry, international border crossings, and temporary inspection sites) to ensure safe operations.	
F	<u>IGP #13</u> Jurisdictions will support a common performance standard for roadside electronic enforcement screening and passage of transponder-equipped motor carriers to ensure equity in enforcement.	
F	<u>IGP #14</u> Roadside electronic enforcement screening criteria will include the following: motor carriers must be enrolled in the jurisdiction's program; must meet the jurisdiction's enrollment criteria; and must meet all legal requirements established by the jurisdiction.	
F	<u>IGP #15</u> Jurisdictions will support quarterly reviews of carrier qualifications to ensure that the standards evolve to meet the changing needs of government and motor carriers.	
F	<u>IGP #16</u> A jurisdiction will not retain the identification codes or other data from the DSRC transponders of passing motor carriers who are not enrolled in the jurisdiction's program.	
F	<u>IGP #17</u> Jurisdictions will support a common performance standard for selection of vehicles and drivers for roadside safety inspection.	
F	<u>IGP #18</u> Jurisdictions will support a common performance standard for recording and reporting roadside safety inspection results.	
F	<u>IGP #19</u> Jurisdictions will support a common performance standard for reconciling disputed roadside safety inspection results.	

ITS/CVO Interoperability Guiding Principles: Program

Commit Level (F/P/N)	Compatibility Criteria	Comments
P	<u>IGP #20</u> Motor carrier participation in ITS/CVO roadside electronic screening programs will be voluntary; motor carriers will not be required to purchase or operate DSRC transponders.	Decision have not been finalized regarding DSRC transponders.
F	<u>IGP #21</u> Motor carriers will have the option of enrolling in any ITS/CVO roadside electronic screening program.	
F	<u>IGP #22</u> Jurisdictions will support uniform criteria for enrollment of motor carriers in ITS/CVO roadside screening programs.	
P	<u>IGP #23</u> Enrollment criteria will include consideration of safety performance and credentials status (e.g., registration, fuel and highway use taxes, and insurance).	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	<u>IGP #24</u> No jurisdiction will be required to enroll motor carriers that do not meet the criteria for enrollment.	
F	<u>IGP #25</u> Motor carriers may obtain a DSRC transponder from the enrolling jurisdiction or a compatible DSRC transponder from an independent equipment vendor of the motor carrier's choice.	
F	<u>IGP #26</u> Each jurisdiction will determine the price and payment procedures, if any, for motor carriers to enroll and participate in its ITS/CVO electronic screening program.	
F	<u>IGP #27</u> Jurisdictions shall work to establish business interoperability agreements among roadside electronic screening programs.	
P	<u>IGP #28</u> A jurisdiction will make a motor carrier's DSRC transponder unique identifier available to another jurisdiction upon written request and authorization by the motor carrier.	Decision have not been finalized regarding DSRC transponders
F	<u>IGP #29</u> Jurisdictions will work toward development of a single point of contact for motor carriers enrolling in more than one ITS/CVO roadside screening program.	

F	<p><u>IGP #30</u> Each jurisdiction will fully disclose and publish its practices and policies governing, at a minimum:</p> <ul style="list-style-type: none">30a. Enrollment criteria;30b. Transponder unique identifier standards;30c. Price and payment procedures for transponders and services;30d. Screening standards;30e. Use of screening event data; and30f. Business interoperability agreements with other programs.	
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Operational Concepts

The Operational Concepts in this section are organized into four groups: general, safety information exchange, credentials administration, electronic screening. Concepts in the “general” category apply to the other three. The concepts are based on an interpretation of the CVISN guiding principles and the state of existing and emerging technologies.

General

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	Good business processes can be enhanced through improved automated access to accurate information.	L1	
F	Authoritative sources are responsible for maintaining accurate information. Each jurisdiction participating in ITS/CVO information exchange identifies the authoritative source for each data item.	L1	
F	Sometimes it is practical for authoritative systems to authorize indirect sources to assist in the information exchange process.	L1	
F	To enable cross-referencing and standard look-ups in multiple information systems, a common scheme for identifying carriers must be adopted. The Primary Carrier ID should be used in interface agreements (open standards, Internet-based exchanges, and custom interface agreements) to facilitate the exchange of carrier information. How the ID is stored internally outside the interface is up to the system implementers. The ID should be based on the US DOT number for both interstate and intrastate carriers. If it is not feasible for the state to use US DOT number as the ID type for all intrastate carriers, then the state should establish some convention for the Primary Carrier ID that will apply to all intrastate carriers in that state.	L1 – interstate C – intrastate	
F	To enable cross-referencing and standard look-ups in multiple information systems, a common scheme for identifying drivers must be adopted for interstate and intrastate operators. The Commercial Drivers License (CDL) number should be the basis of the Driver ID.	L1	
F	To enable cross-referencing and standard look-ups in multiple information systems, a common scheme for identifying vehicles must be adopted for interstate and intrastate operators. The Vehicle Identification Numbers (VIN) and jurisdiction plus license plate numbers should be the bases for the identification of power units.	L1	

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	To enable cross-referencing and standard look-ups in multiple information systems, a common scheme for identifying international trips must be adopted. The Trip/Load number consisting of DUNS and trip-specific ID should be the basis for identifying international trips.	E	Add to 12-208C
F	Standard information exchange is supported via carrier and vehicle (and eventually driver) snapshots.	L1 – carrier & vehicle C – driver	
F	Flexible implementation/deployment options are accommodated by the ITS/CVO architecture. As technology changes, so will the architecture.	L1	
F	Open standards are used for interchanges between public and private systems. In particular, ANSI ASC X12 EDI transactions are used for carrier-state and state-core infrastructure information systems' interactions. DSRC standards for the messages, data link, and physical layers are used for vehicle-roadside interactions.	L1	
F	Enhanced data exchange will allow all activities to focus resources on high risk operators.	L1	
F	Interoperability is assured by a process of architecture conformance checks throughout a project's lifecycle, culminating in execution of standardized interoperability tests. If a tested system is changed, the interoperability tests are re-run as part of the re-validation process.	L1	
F	The Fair Information Principles for ITS/CVO will be implemented using a combination of policies, procedures, technology, and training. Stakeholders will be included in the discussions of the techniques to be used to implement the principles.	L1	
F	Citations are based on a review of real-time conditions and checks with authoritative sources.	L1	

Safety Information Exchange

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	Data are collected to quantify the primary measures of effectiveness related to safety of CVO (accidents and fatalities).	L1	
F	Electronic safety records (snapshots) are made available at the roadside to aid inspectors and other enforcement personnel.	L1	
F	Inspectors use computer applications to capture, verify, and submit intrastate and interstate inspection data at the point of inspection.	L1	
F	Safety data are made available electronically to qualified stakeholders.	L1	
F	User access to data is controlled (restricted and/or monitored) where necessary.	L1	
F	Mechanisms are made available for operators to dispute safety records held by government systems.	L1	
F	Compliance reviews are supported through electronic access to government-held safety records.	E	

F	Safety risk ratings are determined according to uniform guidelines.	E	
F	Jurisdictions support a standard set of criteria for inspection selection.	E	
F	A comprehensive safety policy, including roadside and desk side activities, is implemented to improve safety.	C	
F	Carriers are associated with a base state for safety information record storage and credentialing.	C	
F	Compliance reviews are supported through electronic access to carrier-held records.	C	

Credentials Administration

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
P	Credential applications and fuel tax returns are filed electronically from CVO stakeholder facilities.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	Internal state administrative processes are supported through electronic exchange of application data, safety records, carrier background data, and other government-held records.	L1	
N	IRP and IFTA base state agreements are supported electronically.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
P	Credential and fuel tax payment status information for interstate operators are made available electronically nationally to qualified stakeholders.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	User access to data is controlled (restricted and/or monitored) where necessary.	L1	
F	Mechanisms are made available for operators to dispute credentials records held by government systems.	L1	
P	Fees and taxes are paid electronically.	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	Electronic access to administrative processes and information is available from “one stop shops” in public sites.	E	
P	Credential and fuel tax payment status information for intrastate operators are made available electronically to qualified stakeholders throughout the state.	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	Carrier audits are accomplished with electronic support.	C	
F	The “paperless vehicle” concept is supported, i.e. electronic records become primary and paper records become secondary.	C	

Electronic Screening

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	Widespread participation in electronic screening programs is encouraged.	L1	
F	Jurisdictions disclose practices related to electronic screening.	L1	
F	Electronic screening is provided for vehicles equipped with FHWA-specified DSRC transponders. See Reference 35.	L1	
F	Credentials and safety checks are conducted as part of the screening process.	L1	
F	Fixed and/or mobile roadside check stations are employed for electronic clearance functions, according to the jurisdiction's needs and resources.	L1	
F	Jurisdictions support a common set of screening criteria.	E	
F	Screening systems are interoperable with those in different jurisdictions.	E	

State Institutional Framework

The checklist in this section summarizes the institutional and business-planning steps that Alaska is committing to in order to be ready to implement the CVISN architecture and concepts.

State Institutional Framework Checklist

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	The State is committed to complete the full cycle of the workshops, and upon completion, to begin deployment of the ITS/CVO systems and services that meet the unique economic, administrative, and transportation needs, as outlined in the State ITS/CVO Business Plan.	L1	

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	A qualified core project team that will participate in all three of the workshops has been identified. This project team must include the following individuals: the State's CVISN project manager; the State's CVISN system architect; a project facilitator/administrator, who could be a representative of a participating State agency or a consultant working with the State; operations staff representing the agencies responsible for the State's major CVO functional areas (i.e., IRP, IFTA, safety information systems, roadside safety inspections, size and weight enforcement, and credentials enforcement); staff from the State department of information technology or comparable information technology units within the State CVO agencies; representative of the State Department of Transportation; representative of the FHWA Division office; and a motor carrier industry representative (invited). See Reference 23 for qualification details.	L1	
F	Appropriate and sufficient staff, equipment, and State and private funding are available to carry out the deployment of CVISN and ITS/CVO services. The CVISN project has sufficient priority (i.e., other higher-priority projects are not competing for the same resources).	L1	
F	A State CVO strategic plan and/or business plan exists and has been accepted by the FHWA. It outlines the goals, strategies, anticipated benefits and costs, organization, projects, schedules, and resources relevant to achieving the envisioned CVO environment.	L1	
F	A planning and coordination process exists which includes all State agencies involved in any aspect of motor carrier safety and regulation.	L1	
F	The top executives and chief information systems managers of each involved agency have endorsed State CVO plans and given the CVISN project manager adequate authority.	L1	
F	A process for resolution of conflicts among participating agencies exists.	L1	
F	State agencies have a strong commitment to customer service and the ability to work with the motor carrier industry in their State.	L1	
F	State agencies involve the motor carrier industry in the planning process.	L1	
F	State agencies conduct education programs to improve the safety performance and regulatory compliance of motor carriers.	L1	
F	State agencies provide periodic forums for obtaining suggestions and concerns from the motor carrier industry.	L1	
F	State agencies actively pursue opportunities for and implement business process reengineering projects.	L1	
F	An e-mail system is available among agencies.	L1	
F	At least key agency staff members have access to the Internet.	L1	
P	The State has adopted an open standard (ANSI ASC X12, for example) for electronic data interchange with the public.	L1	XML and/or other technologies will be reviewed
F	The State's communications infrastructure is sufficiently developed to extend to the kinds of exchanges needed under the CVISN Architecture.	L1	
F	There are no State legislative barriers relative to data privacy, physical signature requirements, data exchange among agencies, data exchange with other states, or other uses of information technology required to implement the CVISN concept of operations.	L1	

Commit Level (F/P/N)	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	The legislature provides adequate resources to support an active ITS/CVO program and deployment of the ITS/CVO services.	L1	
F	The State participates in one or more regional CVO forums to assist in developing regional and national interoperable systems and compatible policies and procedures.	L1	
P	The State is willing to provide timely, electronic information to the planned clearinghouses to support the base state agreements.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	The project team has completed the ITS/CVO technical training courses. The first course, Introduction to ITS/CVO, is recommended for workshop participants but can be waived for personnel with prior ITS/CVO knowledge and experience. The second course, ITS/CVO Technical Project Management for Non-Technical Managers, and third course, Understanding ITS/CVO Technology Applications, are required for the personnel who will represent each State at the workshops.	L1	ITSCVO Manager & Sys Arch
F	The State has identified and made adequate progress towards the resolution of any Y2K problems among CVO agencies. It is strongly recommended that States resolve any Year 2000 computer problems among CVO agencies before beginning the workshops.	L1	
F	Effective procurement plans and processes are in place to acquire services and equipment needed to support the CVISN project, and the CVISN team is aware of constraints the processes impose.	L1	
F	Effective subcontract management processes are in place and allow timely identification and resolution of performance problems.	L1	
F	The CVISN team has a clear understanding of the State-specific requirements for information technology projects, e. g., whether or not a feasibility study is required.	L1	
F	The CVISN team has a clear understanding of the State-specific budget cycles and is aware of constraints they impose.	L1	

Alaska Systems Checklists

The checklists in this section provide top-level requirements for the design of Alaska's CVISN Level 1 systems. The top-level requirements are divided into these categories:

- General
- CV Administration
- Safety Information Exchange and Safety Assurance
- Electronic Screening

General State Systems Design Requirements

The general Alaska system design requirements apply to all Alaska systems. These requirements facilitate interoperability and the exchange of information within Alaska, and across jurisdictions.

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Op Test Date	IOC Date	FOC Date	Comments
F	5.1.1	Adopt standard identifiers for carriers, vehicles, drivers, and transponders to support information exchange	L1				
F	1	Adopt standard identifiers for interstate carrier, vehicle, driver, and transponder.	L1				
F	2	Adopt standard identifiers for intrastate carrier, vehicle, driver, and transponder.	C				
F	5.1.2	Use open standards for exchange of information with other jurisdictions and with the public.	L1				
F	1	Use ANSI X12 EDI standards for transactions between state information systems and private systems (CV operators, insurance companies, etc.).	L1				
F	2	Use ANSI X12 EDI standards for transactions between state information systems and CVISN Core Infrastructure systems, where available.	L1				
P	3	Use XML standards for transactions between state information systems and private systems (CV operators, insurance companies, etc.) (contingent on demonstration of feasibility).	C				PILOT PROJECT WITH PFD CURRENTLY ON-GOING
F	5.1.3	Ensure that all information transfers, fee payments, and money transfers are authorized and secure.	L1				
F	5.1.4	Exchange safety and credentials data electronically within the state to support credentialing, safety, and other roadside functions. Where useful, exchange snapshots.	L1				
F	1	Data for interstate carriers	L1				
F	2	Data for interstate vehicles	L1				
F	3	Data for intrastate carriers	E				
F	4	Data for intrastate vehicles	E				
F	5	Data for drivers	C				
F	5.1.5	Demonstrate technical interoperability by performing Interoperability Tests.	L1				
F	5.1.6	Support electronic payments.	E				

Safety Information Exchange and Safety Assurance Systems Design Requirements

The Alaska safety information exchange and safety assurance systems will to consist of:

- ASPEN
- SAFETYNET/AVALANCHE
- Citation & Accident
- CAPRI (Compliance Analysis Performance Review Information)
- CV Information Exchange Window (CVIEW)

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Op Test Date	IOC Date	FOC Date	Comments
F	5.2.1	Use ASPEN (or equivalent) at all major inspection sites	L1				
F	1	Select vehicles and drivers for inspection based on availability of inspector, standard inspection selection system, vehicle measures, and random process, as statutes permit.	L1				
F	2	Report interstate inspections to MCMIS via SAFETYNET	L1				
F	3	Report intrastate inspections to SAFETYNET	L1				
F	4	Submit interstate and intrastate inspections for 45-day storage to SAFER.	L1				
F	5	Periodically check OOS orders issued in the state to focus enforcement and safety assurance activities.	E				
F	6	To assist in inspection, use DSRC to retrieve summary vehicle safety sensor data, if driver allows and vehicle is properly equipped.	C				
F	7	To assist in inspection, use DSRC to retrieve driver's daily log, if driver allows and vehicle is properly equipped.	C				
F	8	Use electronically-generated driver's daily log, if driver offers as an alternative to a manually-maintained log during an inspection.	C				
F	5.2.2	SAFETYNET 2000 submits interstate and intrastate inspections reports to SAFER.	L1				
F	5.2.3	Use CAPRI (or equivalent) for compliance reviews.	L1				
F	1	Report interstate compliance reviews to MCMIS via SAFETYNET	L1				
F	5.2.4	Collect, store, analyze, and distribute citation data electronically.	E				
F	1	Report citations for interstate operators to MCMIS via SAFETYNET	E				
F	5.2.5	Collect, store, analyze, and distribute crash data electronically.	E				
F	1	Report interstate crashes as required to MCMIS via SAFETYNET	E				

F	5.2.6	Compute carrier safety risk rating for intrastate carriers based on safety data collected.	E				
F	5.2.7	Identify high risk drivers based in the state through regular performance evaluation of various factors such as license status, points, and inspections	C				

State CV Administration Systems Design Requirements

Alaska's CV Administration systems consist of:

- Interstate & Intrastate Vehicle Registration
- Fuel Tax Credentialing/Tax Return Processing – Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements Issues
- Credentialing Interface
- Web CAT - Carrier Registration

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Op Test Date	IOC Date	FOC Date	Comments
N	5.3.1	Support electronic credentialing (electronic submission of applications, evaluation, processing, and application response) for IRP using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.2	Proactively provide updates to vehicle snapshots as needed when IRP credentials actions are taken, using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	1	Interface to SAFER for interstate vehicle snapshots, using EDI standards	L1				
N	5.3.3	Proactively provide updates to carrier snapshots as needed when IRP credentials actions are taken, using EDI standards.	L1				NO IRP PARTICIPATION
F	1	Interface to SAFER for interstate carrier snapshots, using EDI standards	L1				
N	5.3.4	Provide IRP Clearinghouse with IRP credential application information (recaps).	L1				NO IRP PARTICIPATION

N	1	Interface to IRP Clearinghouse using EDI standards.	E				This capability is being investigated by an IRP CH committee. Change Request Form 313 in process.
N	5.3.5	Review fees billed and/or collected by a jurisdiction and the portion due other jurisdictions (transmittals) as provided by the IRP Clearinghouse.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	1	Interface to IRP Clearinghouse using EDI standards.	L1				This capability is being investigated by an IRP CH committee. Change Request Form 313 in process.
N	5.3.6	Support electronic state-to-state fee payments via IRP Clearinghouse	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.7	Support electronic credentialing (electronic submission of applications, evaluation, processing, and application response) for IFTA registration using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.8	Proactively provide updates to carrier snapshots as needed when IFTA credentials actions are taken or tax payments are made, using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	1	Interface to SAFER for interstate carrier snapshots, using EDI standards	L1				
N	5.3.9	Provide IFTA Clearinghouse with IFTA credential application information using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.10	Support electronic tax filing for IFTA quarterly fuel tax returns using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.11	Provide information on taxes collected by own jurisdiction and the portion due other jurisdictions (transmittals) to the IFTA Clearinghouse using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.12	Download for automated review the demographic information from the IFTA Clearinghouse using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.13	Download for automated review the transmittal information from the IFTA Clearinghouse using EDI standards.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	5.3.14	Retrieve IFTA tax rate information electronically from IFTA, Inc.	L1				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	5.3.15	Support electronic credentialing (electronic submission of applications, evaluation, processing, and application response) for other credentials using EDI standards.	E				
F	1	Interstate carrier registration	E				
F	2	Intrastate carrier registration	E				

F	3	Vehicle title	E				
F	4	Intrastate vehicle registration	E				
N	5	HazMat credentialing/permitting, if such credentials/permits are required by state law.	E				Not required by Alaska Law
F	6	Oversize/overweight permitting.	E				
F	5.3.16	Proactively provide updates to vehicle snapshots as needed when credentials actions are taken, using EDI standards.	E				
F	1	Vehicle title	E				
F	2	Intrastate vehicle registration	E				
F	3	Oversize/overweight permitting.	E				
F	5.3.17	Proactively provide updates to carrier snapshots as needed when credentials actions are taken, using EDI standards.	E				
F	1	Interstate carrier registration	E				
F	2	Intrastate carrier registration	E				
N	3	HazMat credentialing/permitting, if such credentials/permits are required by state law.	E				Not required by Alaska Law
F	4	Oversize/overweight permitting.	E				
F	5.3.18	Record transponder number and default carrier ID for each vehicle that intends to participate in electronic screening.	E				
F	5.3.19	Collect from the registrant a list of jurisdictions in which the vehicle chooses to participate in electronic screening, and inform those jurisdictions.	E				
F	5.3.20	Allow CV operators, government-operated, or third party systems to submit one or more applications in a single transaction.	E				
F	5.3.21	Provide commercial driver information to other jurisdictions via CDLIS.	L1				
F	5.3.22	Evaluate safety performance prior to issuing credentials (i.e. support PRISM processes or equivalent).	E				
F	5.3.23	Allow carriers to provide information for audits electronically.	C				
F	5.3.24	Provide titling information to other jurisdictions via NMVTIS.	C				
N	5.3.25	Provide revoked IFTA motor carrier information to other jurisdictions via STOLEN.	C				Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	5.3.26	Accept electronic credential and supporting electronic documentation, in lieu of paper versions.	C				
F	5.3.27	Proactively provide updates to driver snapshots as needed when credentials actions are taken, using EDI standards.	C				

State Electronic Screening Systems Design Requirements

Alaska's roadside systems consist of:

- Screening System
- Roadside Operations System
- Sensor/Driver Communications System

These roadside systems will operate at each fixed Port of Entries. The systems perform roadside functions supporting automated carrier, vehicle, and driver identification and associated look-ups in infrastructure-supplied data for credentials and safety checks.

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Op Test Date	IOC Date	FOC Date	Comments
F	5.4.1	Follow FHWA guidelines for Dedicated Short Range Communications (DSRC) equipment. Details below extracted from Reference 35.	L1				
F	1	"For the immediate future, all CVO and Border crossing projects will continue to utilize the current DSRC configuration employed by the programs. This is the "ASTM version 6" active tag.	L1				
F	2	Beginning January 1, 2001, all CVO and Border Crossing projects will use an active configuration that is backward compatible with the current configuration and yet consists of the following:	E				
F	2a	"ASTM version 6" defines the data link layer.	E				
F	2b	The IEEE P1455 application layer standard and the ASTM 1 active physical layer standard will be implemented."	E				
F	5.4.2	Use snapshots to support screening decisions. (SAFER)	L1				
F	1	Carrier snapshots.	L1				
F	2	Vehicle snapshots.	L1				
F	3	Driver snapshots.	C				
F	5.4.3	Implement interoperability policies as they are developed by ITS America, the American Association of State Highway Transportation Officials, HELP, Inc., MAPS, Advantage CVO, I-95 Corridor Coalition, and the Commercial Vehicle Safety Alliance.	L1				
F	1	See AASHTO's Commercial Vehicle Electronic Screening Interoperability Policy Resolution, PR-14-97, Reference 20.	L1				
F	5.4.4	Provide electronic mainline or ramp screening for transponder-equipped vehicles, and clear for bypass if carrier & vehicle were properly identified and screening criteria were passed.	L1				
F	1	For transponder-equipped vehicles, identify carrier at mainline or ramp speeds.	L1				
F	2	For transponder-equipped vehicles, identify vehicle at mainline or ramp speeds.	L1				

F	3	Use WIM or weight history at mainline speed or on the ramp in making screening decisions.	L1				
F	4	Record screening event data.	E				
F	5	For transponder-equipped vehicles, identify driver at mainline or ramp speeds.	C				
F	5.4.5	Verify credentials/safety information with authoritative source prior to issuing citation.	L1				
F	5.4.6	If a vehicle illegally bypasses or leaves the CV check station, alert law enforcement for possible apprehension.	C				
F	5.4.7	Report periodically to State safety information system on the activities conducted at each station (e.g. statistics).	C				

CVISN Core Infrastructure Systems Checklists

The checklists in this section provide top-level requirements for the design of CVISN Core Infrastructure systems. The top-level requirements are divided into these categories:

- General
- IRP Clearinghouse
- IFTA Clearinghouse
- SAFER
- CDLIS
- NMVTIS

Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
F	6.1.1	Adopt standard identifiers for carriers, vehicles, drivers, and transponders to support information exchange	L1	
F	1	Adopt standard identifiers for interstate carrier, vehicle, driver, and transponder.	L1	
F	2	Adopt standard identifiers for intrastate carrier, vehicle, driver, and transponder.	C	
F	6.1.2	Use open standards for exchange of information with jurisdictions and with the public.	L1	
F	1	Use ANSI X12 EDI standards for transactions between CVISN Core Infrastructure systems and private systems (CV operators, insurance companies, etc.).	L1	
F	2	Use ANSI X12 EDI standards for transactions between state information systems and CVISN Core Infrastructure systems, where available.	L1	

F	3	Use XML standards for transactions between CVISN Core Infrastructure information systems and private systems (CV operators, insurance companies, etc.) (contingent on demonstration of feasibility).	C	
F	6.1.3	Ensure that all information transfers, fee payments, and money transfers are authorized and secure.	L1	
F	6.1.4	Exchange safety and credentials data electronically with other CVISN Core Infrastructure to support credentialing, safety, and other roadside functions. Where useful, exchange snapshots.	L1	
F	1	Data for interstate carriers	L1	
F	2	Data for interstate vehicles	L1	
F	3	Data for intrastate carriers	E	
F	4	Data for intrastate vehicles	E	
F	5	Data for drivers	C	
F	6.1.5	Demonstrate technical interoperability by performing Interoperability Tests.	L1	
F	6.1.6	Support electronic payments.	E	

IRP Clearinghouse Issues Related to Alaska's Level 1 Deployment Checklist

Note: Alaska does not participate in IRP and has an exemption from the Federal Government. Alaska plans to participate in the exchange of necessary IRP data to the extent such exchange and transfer is necessary to meet CVISN Level 1 requirements.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
N	6.2.1	Support electronic input of interstate credential application information (demographic and cab card data) from member jurisdictions.	L1	
N	1	Provide ANSI X12 EDI option for transactions.	E	This capability is being investigated by an IRP CH committee. Change Request Form 313 in process.
N	6.2.2	Support electronic input of fee allocation information (recaps), in association with credential applications, from member jurisdictions.	L1	No participation in IFTA or IRP
N	1	Provide ANSI X12 EDI option for transactions.	E	This capability is being investigated by an IRP CH committee. Change Request Form 313 in process.
N	6.2.3	Maintain accounting of fees due to, paid to, and received from member jurisdictions.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements

N	6.2.4	Periodically (monthly), initiate fee payment and transfers among jurisdictions via electronic funds transfer (EFT).	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	6.2.5	Provide accounting information (e.g., netting summaries, financial information about vehicles, Canada-US exchange rates) electronically to member jurisdictions.	L1	
N	1	Provide ANSI X12 EDI option for transactions.	L1	This capability is being investigated by an IRP CH committee. Change Request Form 313 in process.
N	6.2.6	Provide an optional service to determine allocation of fees/taxes to jurisdictions in which the applicant will operate.	C	
N	6.2.7	Upon request, share credential application data from base state with other jurisdiction to audit financial reconciliation of credential/tax fees	E	
N	6.2.8	If requested by a member jurisdiction, and with concurrence from the relevant base states, proactively provide updates to vehicle snapshots as needed when IRP credentials actions are taken, using EDI standards.	L1	This capability is being investigated by an IRP CH committee. Change Request Form 312 in process.
N	6.2.9	If requested by a member jurisdiction, and with concurrence from the relevant base states, proactively provide updates to carrier snapshots as needed when IRP credentials actions are taken, using EDI standards.	L1	This capability is being investigated by an IRP CH committee. Change Request Form 312 in process.

IFTA Clearinghouse Issues Related to Alaska's Level 1 Deployment Checklist

The CVISN Core Infrastructure includes two different clearinghouses (IRP, IFTA). This section presents a checklist that applies to the IFTA Clearinghouse. Note: Alaska does not participate in IFTA and has an exemption from the Federal Government. Alaska plans to participate in the exchange of necessary IFTA data to the extent such exchange and transfer is necessary to meet CVISN Level 1 requirements.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
N	6.3.1	Support electronic input of interstate credential application information (demographic) from member jurisdictions.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements

N	1	Provide ANSI X12 EDI option for transactions.	L1	
N	6.3.2	Support electronic input of tax payment information (transmittals), in association with quarterly tax filings, from member jurisdictions.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	1	Provide ANSI X12 EDI option for transactions.	L1	
N	6.3.3	Provide reports on demographic and transmittal information.	L1	
N	1	Provide ANSI X12 EDI option for transactions.	L1	
N	6.3.4	Upon request, share credential application data from base state with other jurisdiction to audit financial reconciliation of credential/tax fees	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	6.3.5	If requested by a member jurisdiction, and with concurrence from the relevant base states, proactively provide updates to carrier snapshots as needed when IFTA credentials and tax filing actions are taken, using EDI standards.	L1	This capability is being investigated by an IFTA CH committee.

Information Storage and Exchange Checklist

The Safety and Fitness Electronic Records (SAFER) system is under development. As capabilities are implemented, the version of the system is tested and made available for general use. The checklist shows general capabilities.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
F	6.4.1	Maintain carrier and vehicle snapshots for interstate operators.	L1	
F	6.4.2	Accept inputs from authoritative sources for carrier and vehicle snapshots.	L1	
F	1	Provide ANSI X12 EDI option for transactions.	L1	
F	6.4.3	Provide snapshot subscription service to government users.	L1	
F	1	Proactively transmit updated snapshot segments to subscribers based on subscription criteria.	L1	
F	2	Provide ANSI X12 EDI option for transactions.	L1	
F	6.4.4	Upon request, retrieve existing snapshot(s) and transmit to requester.	L1	
F	1	Provide ANSI X12 EDI option for transactions.	L1	
F	6.4.5	Provide means for commercial vehicle operators to view data about themselves.	L1	
F	6.4.6	Facilitate the exchange of inspection reports.	L1	
F	1	Provide ANSI X12 EDI option for transactions.	L1	

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
F	6.4.7	Provide inspection report subscription service for Law Enforcement.	L1	
F	6.4.8	Facilitate the exchange of crash data.	E	
F	1	Provide open standard option for transactions.	E	
F	6.4.9	Facilitate the exchange of citation data.	E	
F	1	Provide open standard option for transactions.	E	
F	6.4.10	Maintain driver snapshots.	C	
F	6.4.11	Accept inputs from authoritative sources for driver snapshots.	C	
F	1	Provide ANSI X12 EDI option for transactions.	C	

CDLIS Planned Capabilities

The Commercial Driver License Information System (CDLIS) currently supports CVO by providing access to information about commercial drivers to authorized users.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
	6.5	CDLIS - existing system		
F	6.5.1	Connect to SAFER so systems that access SAFER can also link to CDLIS.	L1	

NMVTIS Planned Capabilities

The National Motor Vehicle Title Information System (NMVTIS) is a developing system. No specific changes are planned, although it is possible that access will be provided via SAFER in the future. *Alaska participates in NMVTIS presently.*

MCMIS Planned Capabilities

The Motor Carrier Management Information System (MCMIS) is the FHWA repository for inspection, compliance, crash, and citation data for interstate commercial vehicle operators. Some upgrades have been implemented to support CVISN concepts, such as linking MCMIS to SAFER. Further modernization is planned. *Alaska participates in MCMIS presently.*

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
	6.5	MCMIS - existing system		
	6.5.1	Provide safety information to SAFER for snapshots.	L1	
	6.5.2	Provide safety information to users via SAFER Data Mailbox and MCMIS/SAFER Gateway.	L1	

Licensing & Insurance Planned Capabilities

The Licensing & Insurance system currently supports registering financial responsibility for interstate carriers according to Federal regulations. Some upgrades have been implemented to support CVISN concepts such as linking to SAFER. Further modernization is planned.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
	6.9	Licensing & Insurance - existing system		
F	6.9.1	Provide licensing & insurance information to SAFER for snapshots	L1	

ASAP Planned Capabilities

The Automated Safety Assessment Program (ASAP) system is under development. As it matures, links to other systems may be implemented.

State Commit Level (F/P/N)	Item #	Planned Capabilities	Req Level (L1/E/C)	Comments
	6.10	ASAP – developing system		
P	6.10.1	Collect compliance data from carrier electronically	E	

Capri Planned Capabilities

The Carrier Automated Performance Review Information (CAPRI) system is used today to record compliance reviews. No specific changes are planned, although it is expected that access to past reports may be provided via SAFER in the future. *Alaska plans to use CAPRI.*

Carrier Systems Checklists

The checklists in this chapter provide top-level requirements for the design of carrier systems. This chapter is based on the design requirements from the tables in the State Systems and CVISN Core Infrastructure Systems chapters of this document. It is not intended to cover all functions associated with carrier operations.

The top-level requirements are divided into these categories:

- General
- Fleet & Freight Management

General Carrier Systems Design Requirements

The general carrier systems design requirements apply to all carrier systems. They facilitate interoperability and the exchange of information with government systems.

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	7.1.1	Adopt standard identifiers for carriers, vehicles, drivers, and transponders to support information exchange	L1	
F	1	Adopt standard identifiers for interstate carrier, vehicle, driver, and transponder.	L1	
F	2	Adopt standard identifiers for intrastate carrier, vehicle, driver, and transponder.	C	
F	7.1.2	Use open standards for exchange of information with jurisdictions.	L1	
N	1	Use ANSI X12 EDI standards for transactions with state information systems.	L1	
N	2	Use ANSI X12 EDI standards for transactions with CVISN Core Infrastructure systems, where available.	L1	
F	3	Use XML standards for transactions with state information systems (contingent on demonstration of feasibility).	C	
F	4	Use XML standards for transactions with CVISN Core Infrastructure information systems (contingent on demonstration of feasibility).	C	
F	7.1.3	Ensure that all information transfers, fee payments, and money transfers are authorized and secure.	L1	
F	7.1.4	Demonstrate technical interoperability by performing Interoperability Tests.	L1	
F	7.1.5	Support electronic payments.	E	

Fleet and Freight Management Systems Design Requirements

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Comments
N	7.2.1	Support electronic credentialing (electronic submission of applications, receipt & processing of application response, acknowledgements, error indications, and invoices) for IRP using EDI standards.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	7.2.2	Support electronic credentialing (electronic submission of applications, receipt & processing of application response, acknowledgements, error indications, and invoices) for IFTA registration using EDI standards.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	7.2.3	Support electronic tax filing for IFTA quarterly fuel tax returns using EDI standards.	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	7.2.4	Support electronic credentialing (electronic submission of applications, receipt & processing of application response, acknowledgements, error indications, and invoices) for other credentials using EDI standards.	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	1	Interstate carrier registration	E	
F	2	Intrastate carrier registration	E	
F	3	Vehicle title	E	
F	4	Intrastate vehicle registration	E	
N	5	HazMat credentialing/permitting, if such credentials/permits are required by state law.	E	NOT REQUIRED IN ALASKA
F	6	Oversize/overweight permitting.	E	
F	7.2.5	Provide transponder number and default carrier ID for each vehicle that intends to participate in electronic screening.	E	
F	7.2.6	Provide a list of jurisdictions in which the vehicle chooses to participate in electronic screening, and inform those jurisdictions.	E	
F	7.2.8	Provide the ability to submit one or more like-kind applications in a single transaction.	E	
F	7.2.9	Provide information for audits electronically.	C	
N	7.2.10	Connect the Credentialing System to other fleet/freight legacy systems so that credential application information is generated, evaluated, and submitted electronically and automatically, as appropriate, for renewals and periodic tax filings (for medium to large carriers).	E	
F	7.2.11	Accept electronic credential and supporting electronic documentation, in lieu of paper versions.	C	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	7.2.12	Provide compliance data electronically.	E	
F	7.2.13	Review government-held safety and credentials data periodically.	L1	

Commercial Vehicle System Designs Requirements

The commercial vehicle systems design requirements apply to the vehicle-based systems. These are the carrier counterparts to the state requirements listed earlier.

Commit Level (F/P/N)	Item #	Compatibility Criteria	Req Level (L1/E/C)	Comments
F	7.3.1	Follow FHWA guidelines for Dedicated Short Range Communications (DSRC) equipment. (Reference 35)	L1	
F	1	For the immediate future, all CVO and Border crossing projects will continue to utilize the current DSRC configuration employed by the programs. This is the "ASTM version 6" active tag.	L1	
F	2	Beginning January 1, 2001, all CVO and Border Crossing projects will use an active configuration that is backward compatible with the current configuration and yet consists of the following:	E	
F	2a	"ASTM version 6" defines the data link layer.	E	
F	2b	The IEEE P1455 application layer standard and the ASTM 1 active physical layer standard will be implemented.	E	
F	7.3.2	For transponder-equipped vehicles, enter or check standard identifiers for carrier, vehicle, and transponder at the start of each trip	E	
F	7.3.3	Implement interoperability policies as they are developed by ITS America, the American Association of State Highway Transportation Officials, HELP, Inc., MAPS, Advantage CVO, I-95 Corridor Coalition, and the Commercial Vehicle Safety Alliance.	L1	
F	1	See AASHTO's Commercial Vehicle Electronic Screening Interoperability Policy Resolution, PR-14-97, Reference 20.	L1	
F	7.3.4	Obey pull-in signals issued by DSRC or other equipment.	L1	
F	7.3.5	For transponder-equipped vehicles, enter or check standard identifier for driver at the start of each trip	L1	
F	7.3.6	Use electronically-generated driver's daily log, as an alternative to a manually-maintained log, and provide to inspectors upon request.	C	
F	7.3.7	On transponder-equipped vehicles, to assist in inspection, use DSRC to retrieve driver's daily log	C	
F	7.3.8	On transponder-equipped vehicles, to assist in inspection, use DSRC to retrieve summary vehicle safety sensor data.	C	
P	7.3.9	Equip all vehicles with transponders.	C	

Appendix B – COACH PART 3

**Intelligent Transportation Systems (ITS)
Commercial Vehicle Operations (CVO)**

**CVISN Operational and Architectural
Compatibility Handbook (COACH)
Part 3
Detailed System Checklists**

Baseline Version

POR-97-7067 P1.0

May 1999

Please note that this is a Preliminary Issue

It is important to note that this is a preliminary document. All sections included are complete and have been reviewed by JHU/APL, but not by other DOT contractors or state/federal government agencies. The purpose of this issue is to obtain comments and feedback on this document from those external organizations before a baseline version is published.

Note: This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from the JHU/APL CVISN site on the World Wide Web. The URL for the CVISN site is: <http://www.jhuapl.edu/cvisn/>

Review and comments to this document are welcome. Please send comments to:

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**CVISN Operational and Architectural Compatibility Handbook (COACH)
Part 3 – Detailed System Checklists**

Introduction

The CVISN Operational and Architectural Compatibility Handbook (COACH) provides a comprehensive checklist of what is required to conform with the Commercial Vehicle Information Systems and Networks (CVISN) operational concepts and architecture. It is intended for use by state agencies with a motor carrier regulatory function and by motor carriers. It is also intended to provide a quick reference for developers of CVISN Core Infrastructure systems.

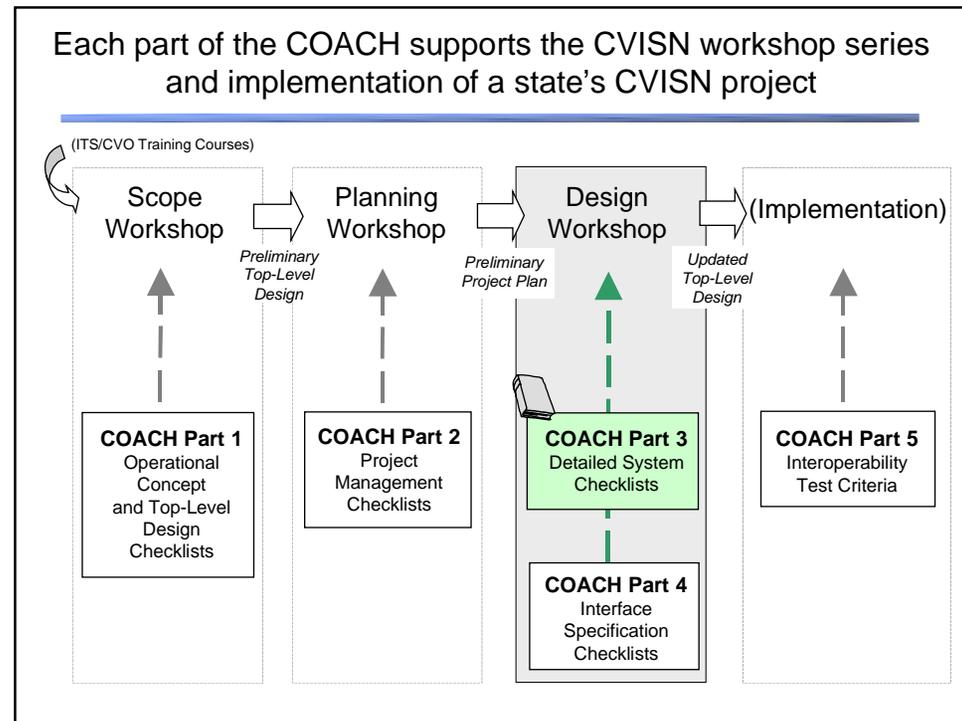
COACH Structure

The COACH is divided into 5 parts:

- Part 1 - Operational Concept and Top-Level Design Checklists
- Part 2 - Project Management Checklists
- Part 3 - Detailed System Checklists**
- Part 4 - Interface Specification Checklists
- Part 5 - Interoperability Test Criteria

Parts 1 [Reference 2], 2 [Reference 3], and 4 [Reference 4], and 5 [Reference 5] are available at the Browse and Download Documentation; Architecture section of the JHU/APL CVISN web site <http://www.jhuapl.edu/cvo/>. This is the first draft of the COACH Part 3.

COACH Part 3 Detailed System Checklists Description



This volume is Part 3. Part 3 describes the generic CVISN design.

- Data Maintenance Specifications, establishing the requirements incumbent on data “owners” to keep others informed about changes in data values [Chapter 2]
- Allocation of State System requirements to components of the generic CVISN state design, and description of those generic components [Chapter 3]
- Description of CVISN Core Infrastructure components [Chapter 4]
- Description of Carrier System components [Chapter 5]
- References [Chapter 6]

Since the means of communications (e.g., network configuration, protocols supported) are usually specific to each state or to each system, readers should contact the state architect or the system manager for that information. This document is concerned primarily with the information exchanged among systems. Communications standards for vehicle-to-roadside communications are stated.

This document is used to allocate the state requirements from the COACH Part 1 to components of the state system design. The document also includes checklists for data maintenance requirements. Each state should maintain a master filled-in copy of the COACH.

Generic State CVISN System Design

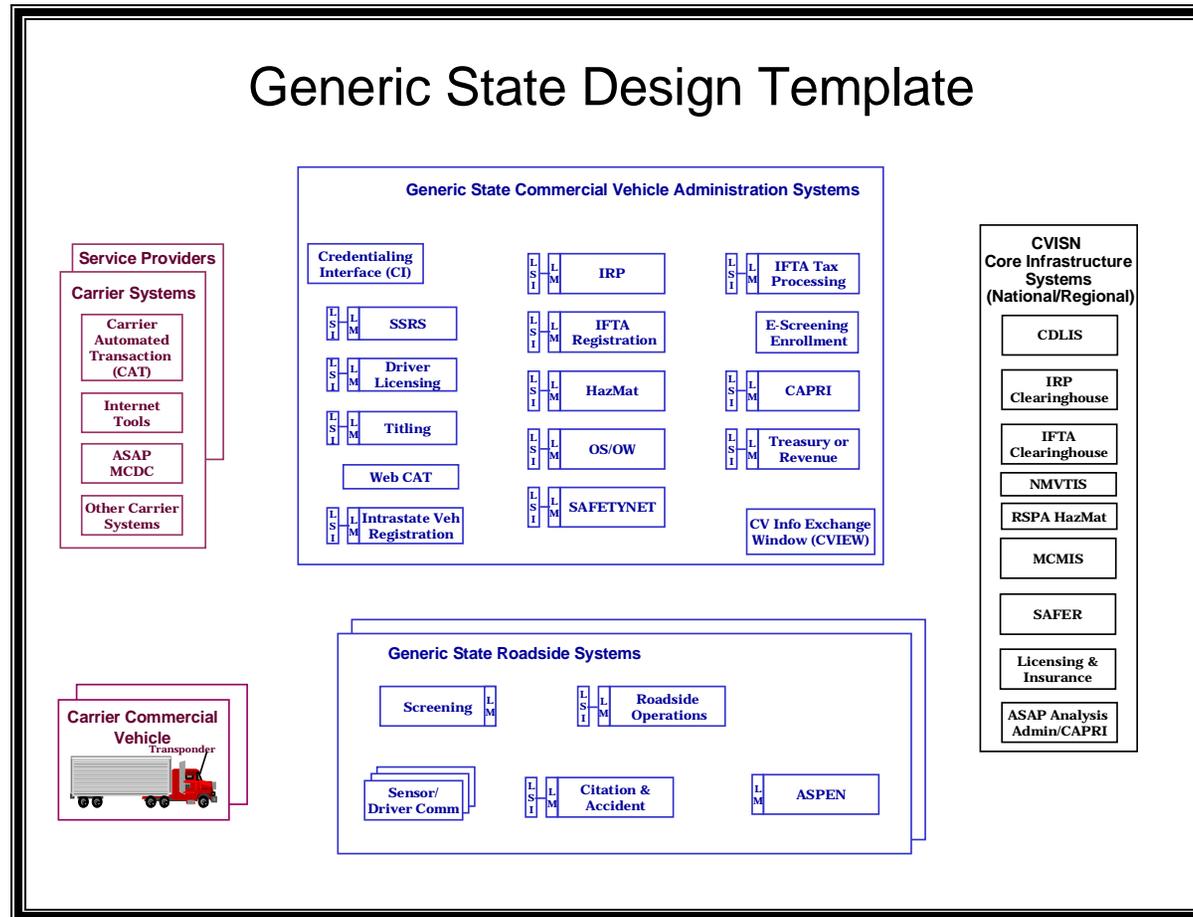
Figure 1.3-1 below depicts the generic CVISN state system design template. Material in this document is based upon this generic design. The systems shown in the generic design are described in chapters 3-5. The CVISN Glossary [Reference 1] explains the acronyms. The generic design represents the main elements needed for a state to implement the CVISN architecture. Each state will adapt the generic design to accommodate their existing (legacy) systems, and to meet their own unique needs.

Use of standardized Electronic Data Interchange (EDI) and Dedicated Short Range Communications (DSRC) interfaces is required for architecture conformance. Each state chooses whether to modify a legacy system (LM - legacy modification) to support EDI (and other new functions and interfaces), or to create a Legacy System Interface (LSI) to deal with the EDI-to-native form interface. Many CVISN states are implementing a mix of LSIs and LMs. Throughout this document, the generic state system design is based on choosing to modify the legacy systems (i.e., implement LMs).

In the generic design depicted here, the legacy credentials systems update the appropriate snapshot segments in CVIEW using EDI. The inspection system in the generic state design is ASPEN. In this design, both the Roadside Operations and ASPEN products subscribe to CVIEW to receive snapshots. The CVIEW-Roadside Operations connection is an EDI interface. The CVIEW-ASPEN interface uses the “application file format” that corresponds to a file format that could be input into an EDI translator. As of April 1999, ASPEN does not handle EDI, due to the expense of equipping several hundred ASPEN units with commercial translators.

To achieve interoperability, the CVISN architecture calls for the use of open standards for carrier-state and state-state (via the CVISN Core Infrastructure) interfaces. Interfaces that are wholly within a state government’s control (e.g., between state agencies) are not required to use open standards. Most CVISN Model Deployment States have chosen to use open standards for some within-state interfaces, and have chosen to use existing custom interface agreements for others. For example, some states have chosen to implement LSIs instead of modifying their existing IRP or IFTA products. They are implementing the LSIs as small applications running on the same computer as the Credentialing Interface (CI). For those states, there are no EDI interfaces between the CI and their existing IRP or IFTA systems. Some of those states have also decided that the CI will provide snapshot segment updates of credentials data to CVIEW on behalf of the IRP or IFTA systems. In this document we depict one generic design for simplicity. The generic design shown here maximizes the use of open standards. Other designs are also acceptable under the CVISN architecture. Refer to the technical volumes of the CVISN Guide series for further information [References 8-10].

Figure C-5 Generic State Design Template



How States Should Use This Document

The COACH summarizes key concepts and architectural guidelines for CVISN. This version of the COACH Part 3 focuses on topics important to states. The COACH Part 1 defines the CVISN Level 1 criteria. This document allocates the state requirements from the COACH Part 1 to specific components of the generic state CVISN design. This document also provides more information about the CVISN Core Infrastructure products and the components of the Carrier Systems. The Data Maintenance table in Chapter 2 provides guidelines for maintaining data shared across functional areas.

To gain a more complete understanding of CVISN, state planners and designers should read the Introductory Guide to CVISN [Reference 7], other parts of the COACH [References 2-5], and the CVISN System Design Description [Reference 6]. The COACH Part 2 includes checklists that support the project planning processes. The COACH Part 4 defines the interface specification requirements. The COACH Part 5 states interoperability testing criteria. The CVISN System Design Description describes system requirements related to CVISN Level 1 capabilities, the generic CVISN design, and how the elements fit together.

This version of the COACH Part 3 is intended to be a model for how states might allocate the COACH Part 1 requirements to elements of their system designs. This document will be used in the planned CVISN workshops.

The “Commit” column in the table in Chapter 2 should be used to indicate the state’s commitment to the data maintenance/update requirement stated in the “Requirement for data to be maintained or updated” column. As in the COACH Part 1, the codes for commitment are defined as:

- Commit Level (F/P/N) – the state’s commitment level to the item
Using the first column of each checklist entry, a **commitment level should be filled in** by the state. There are three possible levels of commitment:
 - (F) This rating indicates a full commitment. This level means that at least 80% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist item statement.
 - (P) This rating indicates a partial commitment. This level means that between 50% and 80% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist item statement.
 - (N) This rating indicates no commitment. This level means that less than 50% of the state’s systems involved in the process implied by the checklist item are compatible or are intended to be compatible with the checklist statement.

- Reqs Level - the compatibility requirement level assigned to this compatibility criterion by the FHWA CVISN project team
For a state to be “compatible with CVISN,” it must implement selected items in the checklists. To distinguish those items, the CVISN project team has assigned a **compatibility requirement level** to each checklist item:
 - (L1) This rating identifies a CVISN Level 1 compatibility requirement.
 - (E) This rating indicates an enhanced level of CVISN compatibility. These items may require a little longer to complete (3-4 years).
 - (C) This rating indicates a complete level of CVISN Compatibility. Satisfying all these provides complete CVISN compatibility. These items are expected to require a longer-range (5 or more years) time frame.

States are expected to focus initially on checklist items with an *LI* compatibility requirement level rating. Making a *partial commitment* indicates that the state will at least demonstrate the feasibility of that concept or architectural guideline. Making a *full commitment* indicates that the state will fully implement the concept or architectural guideline and be ready for the next steps.

The generic CVISN state design has been summarized in this document in a series of tables in Chapter 3. The first and second columns came from the COACH Part 1 (Item # and Compatibility Criteria). The remaining columns correspond to components of the generic state design. The compatibility requirement level (L1, E, or C) in a cell indicates that the compatibility criterion is fulfilled in part or in whole by that component of the generic CVISN state design, and in what timeframe the criterion is expected to be implemented. The last column is for state-specific comments.

In its own version of this document, each state may choose to fill in the cells in Chapter 3 differently. The state may choose to use more specific product names in the columns in Chapter 3, or may add/delete design component columns. The state may use the Comments column to clarify what functions are performed by each marked component if a row implies support from multiple components.

If the state maintains its master copy of this document electronically, the following conventions are recommended when filling in the columns to illustrate the “firmness” of the state’s plan:

- *Italics type* : Tentative, not approved by the final decision makers
- Regular type : Approved by the decision makers (or supported by consensus)
- **Bold type** : Completed

Chapters 4 and 5 give a little more information about the functions of each of the CVISN Core Infrastructure and Carrier systems than was provided in COACH Part 1. The chapters are provided for information only.

States are to indicate their commitment to the data maintenance/update requirements in Chapter 2, and are to tailor their allocation of requirements to state system components in Chapter 3 prior to attending the CVISN Design Workshop.

This appendix contains the tables extracted from the CVISN Operational and Architectural Compatibility Handbook (COACH) Part 3 Detailed System Checklists

Data Maintenance Requirements

The checklists in this chapter summarize the requirements for maintaining data and sharing updates with other CVO stakeholders. Systems should be designed to meet these criteria. If a user group has more stringent requirements, those requirements override these.

Commit Level (F/P/N)	Data Need Category	Requirement for data to be maintained or updated	Reqs Level	Comments
F	1. <i>Routine snapshot segment changes</i> are those for which users can wait until the next routine snapshot update is scheduled. Routine snapshot data changes include updates related to passed inspections, compliance reviews, or credential renewals or supplements.	The source system should update the snapshot record within 24 hours of the change.	L1; C	L1 for carrier & vehicle snapshots; C for driver snapshots
F	2. <i>High-priority snapshot segment changes</i> are those which users need to know about immediately. High priority snapshot data changes include out-of-service (OOS) resulting from an inspection.	The source system should update the snapshot record within 30 minutes hour of the change.	L1; C	L1 for carrier & vehicle snapshots; C for driver snapshots
F	3. <i>Snapshot subscription fulfillment</i> is the SAFER or CVIEW process for sending specified snapshot output views to users based on standing requests to do so when specified data changes.	Whenever the criteria for sending a snapshot are triggered, the snapshot system (CVIEW or SAFER) should distribute the revised snapshot within 24 hours for routine snapshot segment changes, and within 30 minutes for high-priority snapshot segment changes.	L1; C	L1 for carrier & vehicle snapshots; C for driver snapshots

Commit Level (F/P/N)	Data Need Category	Requirement for data to be maintained or updated	Reqs Level	Comments
F	4. <i>An inspection report</i> indicates the results of an inspection conducted at the roadside by a qualified inspector.	Normally, the results of an inspection using ASPEN should be reported electronically within 24 hours of being conducted. If the vehicle or driver was placed OOS, the results should be reported within 30 minutes.	L1	
F	5. <i>Credential application response</i> is the response from the state to the applicant. In this context, the “response” reflects the results of evaluating the credential application.	The state system should respond to the applicant’s system within 2 hours for a correct transaction that requires no manual intervention. If manual intervention is required, the state system should respond to the applicant’s system within 24 hours of receipt of an electronic input.	L1	
N/A	6. <i>IRP base state agreement data</i> are those data required by other jurisdictions to understand the fees collected on their behalf. In IRP lingo, these data are exchanged via “recaps.”	The state IRP system should send recaps to the IRP Clearinghouse at least monthly.	L1	
N/A	7. <i>IFTA base state agreement data</i> are those data required by other jurisdictions to understand the quarterly fuel taxes collected on their behalf. In IFTA lingo, these data are called “demographic” for basic census information, and “transmittal” for tax return information.	The state IFTA system should send updated demographic and transmittal data to the IFTA Clearinghouse at least monthly.	L1	

Commit Level (F/P/N)	Data Need Category	Requirement for data to be maintained or updated	Reqs Level	Comments
F	8. The <i>Privacy Act of 1974</i> [Reference 18] attempts to regulate the collection, maintenance, use, and dissemination of personal information by federal government agencies. Federal systems must adhere to the law. Some sections of the law apply to state and local governments as well. Additionally, some states have related laws regarding privacy and data access.	The systems affected by the Act or related statutes should incorporate procedures, protocols, and designs that support the law. The Privacy Act include sections concerning data disclosure, accounting of disclosure, access, amendment, reporting, archiving, and other activities.	L1	

Item #	Compatibility Criteria	State																		Comments			
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/OW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN	Citation & Accident	CAPRI	Screening		Roadside Operations	Sensor/Driver Comm	
3.1.1	Adopt standard identifiers for carriers, vehicles, drivers, and transponders to support information exchange.	L1	L1	C	L1		E	E	E	C	E	E	E	L1	L1	L1	E	L1	L1	L1	L1		
1	Adopt standard identifiers for interstate carrier, vehicle, driver, and transponder.	L1	L1		L1		E	E	E	C	E	E	E	L1	L1	L1	E	L1	L1	L1	L1		
2	Adopt standard identifiers for intrastate carrier, vehicle, driver, and transponder.			C	C		C	C		C	C	C	C	C	C	C	C	C	C	C	C	C	

Item #	Compatibility Criteria	State															Comments						
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/OW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN		Citation & Accident	CAPRI	Screening	Roadside Operations	Sensor/Driver Comm	
3.1.2	Use open standards for exchange of information with other jurisdictions and with the public.	L1	L1		L1		E	L1	E	C					L1		C						
1	Use ANSI X12 EDI standards for transactions between state information systems and private systems (CV operators, insurance companies, etc.).				L1																		AK will also consider XML or
2	Use ANSI X12 EDI standards for transactions between state information systems and CVISN Core Infrastructure systems, where available.	L1	L1				E	L1	E						L1		C						
3	Use XML standards for transactions between state information systems and private systems (CV operators, insurance companies, etc.) (contingent on demonstration of feasibility).				C					C					C	C	C						

Item #	Compatibility Criteria	State																			Comments		
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/OW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN	Citation & Accident	CAPRI	Screening	Roadside Operations		Sensor/Driver Comm	
3.1.3	Ensure that all information transfers, fee payments, and money transfers are authorized and secure.	L1	L1	E	L1	L1	E	E	E	C	E	E	E	L1	L1	L1	C	L1	L1	L1	L1		
3.1.4	Exchange safety and credentials data electronically within the state to support credentialing, safety, and other roadside functions. Where useful, exchange snapshots.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
1	Data for interstate carriers	L1	L1		L1	L1				E	C	E		E	L1	L1	L1	C	L1	L1	L1		
2	Data for interstate vehicles		L1		L1	L1	E					E	E	L1	L1	L1	C	L1	L1	L1			
3	Data for intrastate carriers				E	E							E	E	E	E	C	E	E	E			
4	Data for intrastate vehicles			E	E	E	E					E	E	E	E	E	C	E	E	E			
5	Data for drivers					E		C						C	C	C	C		C	C			
3.1.5	Demonstrate technical interoperability by performing Interoperability Tests.	L1	L1	E	L1		E	C	E	C	E	E	E	L1	L1	L1	C		L1	L1	L1		
3.1.6	Support electronic payments.	E	E	E	E	E	E		E	C	E	E	E										

Allocation of General Alaska System Design Requirements

The general state systems design requirements are allocated to all the systems that support the functions described by the compatibility criteria in the following table.

Allocation of Alaska's CV Credentials Administration and System Design Requirements

The paragraphs in this section describe the functions of each Safety Information Exchange and Safety Assurance product in the generic CVISN state system design. Requirements from the COACH Part 1 are allocated to specific products in table 3.2.

SAFETYNET

This product was developed and is maintained by FHWA. SAFETYNET, operating in every state, collects safety data, provides tools to analyze and edit the data, and reports safety data to FHWA's MCMIS. According to Reference 12, SAFETYNET is the state-level information management system for motor carrier safety. SAFETYNET captures inter- and intra-state driver/vehicle inspection data, accident data, carrier compliance reviews, enforcement data, and carrier identification data. Originally designed as a manual data entry system, SAFETYNET now allows electronic data collection. The system is central to successful management and operation of the Motor Carrier Safety Assistance Program (MCSAP). It contains many report-generating, prioritizing and task tracking routines. The next generation "SAFETYNET 2000" will be available in 1999 and will provide a robust client-server, SQL database management system.

CVIEW

Commercial Vehicle Information Exchange Window. This product is a spin-off of the FHWA-developed SAFER system. It is owned by and located in a state. In CVISN Level 1, there is a requirement to implement a system called CVIEW (Commercial Vehicle Information Exchange Window) or its equivalent for snapshot exchange within the state and to other states. The CVIEW or equivalent functions are listed below:

- Provide for the electronic exchange of state-based interstate carrier and vehicle credential data between state source/legacy systems, users, and SAFER
- Provide for the electronic exchange of intrastate carrier and vehicle safety and credential data between state source systems and users
- Serve as the repository for a state-selected subset of interstate carrier and vehicle safety and credential data
- Serve as the repository for a state-selected subset of intrastate carrier and vehicle safety and credential data
- Provide inter- and intrastate carrier and vehicle safety and credential data to the roadside to support electronic screening and other roadside operations

In addition to these snapshot-related functions, CVIEW or its equivalent is also expected to serve as the single interface system for ASPEN units in the field. ASPEN will retrieve inspections through CVIEW, and report inspections through CVIEW. CVIEW has similar Data Mailbox facilities as SAFER to facilitate the exchange of information among state users within the state agencies.

ASPEN

Record & report safety inspections. According to Reference 12, ASPEN is a driver/vehicle safety inspection software package that improves the entire inspection process by providing inspectors at the roadside access to safety performance information including the most recent inspection results, the driver's CDL status (see CDLIS) and the safety performance and past safety problems of the carrier (see ISS). ASPEN can be seen as an intelligent assistant that ensures complete and accurate data collection at the roadside. Inspectors select applicable violations from lists of possible citations and add descriptive notes as needed. The program can be customized for use by different States. ASPEN prints an inspection report on-site that is given to the driver. A copy also can be faxed to carrier management. ASPEN inspection data is electronically transferred to State information systems via CVIEW and SAFER. Optimized for use with pen-computers, ASPEN can also be run on Mobile Data Terminals and laptop computers. ASPEN's functions include:

- Interface with Roadside Operations system (to get screening data, notify when inspector available)
- Interface with CDLIS to check CDL status
- Interface to CVIEW/Data Mailbox system (directly or via Roadside Ops) to report inspections and access snapshots and safety reports
- Inspect vehicle - provide operator data entry of inspection results
- Update ASPEN internal database
- Calculate/display Inspection Selection System (ISS) value which recommends inspection based on carrier safety history

According to Reference 12, ISS is a standardized algorithm uses carrier safety performance and inspection history data to rank carriers according to the relative value of conducting a vehicle inspection. The objective is to increase inspections on carriers with poor safety performance records (accidents, out-of-service defects and other safety problems) while also increasing inspections on carriers where there is little available information. ISS runs within ASPEN and also as a stand alone for Port of Entry use. Eventually it may also be used for mainline vehicle screening.

Citation & Accident

Record citation and accident data. This product may exist in some form in some states. Generally, the product is envisioned to perform these functions:

- Enter citation data electronically
- Issue citations
- Enter accident data electronically

- Generate accident reports
- Interface to CVIEW system (directly or through Roadside Ops) to report citations and accidents and access safety reports

Item #	Compatibility Criteria	State															Comments						
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/OW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN		Citation & Accident	CAPRI	Screening	Roadside Operations	Sensor/Driver Comm	
3.2.1	Use ASPEN (or equivalent) at all major inspection sites.															L1							
1	Select vehicles and drivers for inspection based on availability of inspector, standard inspection selection system (ISS), vehicle measures, and random process, as statutes permit.															L1			L1	L1			
2	Report interstate inspections to MCMIS via SAFETYNET.												L1	L1	L1								
3	Report intrastate inspections to SAFETYNET.												L1	L1	L1								

Item #	Compatibility Criteria	State															Comments						
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/OW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN		Citation & Accident	CAPRI	Screening	Roadside Operations	Sensor/Driver Comm	
3.2.3	Use CAPRI (or equivalent) for compliance reviews.																L1						
1	Report interstate compliance reviews to MCMIS via SAFETYNET.												L1				L1						
3.2.4	Collect, store, analyze, and distribute citation data electronically.												L1, C	C		C							C - Report to SAFETYNET 2000 via CVIEW and SAFER Data Mailbox
1	Report citations for interstate operators to MCMIS via SAFETYNET.												L1, C	C		C							C - Report to SAFETYNET 2000 via CVIEW and SAFER Data Mailbox
3.2.5	Collect, store, analyze, and distribute crash data electronically.												L1, C	C		C							C - Report to SAFETYNET 2000 via CVIEW and SAFER Data Mailbox
1	Report interstate crashes as required to MCMIS via SAFETYNET.												L1, C	C		C							C - Report to SAFETYNET 2000 via CVIEW and SAFER Data Mailbox
3.2.6	Compute carrier safety risk rating for intrastate carriers based on safety data collected.												E										
3.2.7	Identify high risk drivers based in the state through regular performance evaluation of various factors such as license status, points, and inspections.												C										

CAPRI

Carrier Automated Performance Review Information. This product was developed and is maintained by FHWA. CAPRI supports

Item #	Compatibility Criteria	State															Comments							
		IFTA	IRP	Intrastate Veh Registr	Credentialing Interface	Treasury	Titling	CDL/DL	SSRS	WebCAT	HazMat	OS/IOW	E-Screening Enrollment	SAFETYNET	CVIEW	ASPEN		Citation & Accident	CAPRI	Screening	Roadside Operations	Sensor/Driver Comm		
4	Submit interstate and intrastate inspections for 45-day storage to SAFER.														L1	L1								
5	Periodically check OOS orders issued in the state to focus enforcement and safety assurance activities.													E										
6	To assist in inspection, use DSRC to retrieve summary vehicle safety sensor data, if driver allows and vehicle is properly equipped.																C						C	
7	To assist in inspection, use DSRC to retrieve driver's daily log, if driver allows and vehicle is properly equipped.																C						C	
8	Use electronically-generated driver's daily log, if driver offers as an alternative to a manually-maintained log during an inspection.																C						C	
3.2.2	SAFETYNET 2000 submits interstate and intrastate inspections reports to SAFER.													L1										

compliance reviews. All Federal staff and most States use CAPRI software.

Allocation of State CV Credentials Administration Systems Design Requirements

The paragraphs in this section describe the functions of each CV Credentials Administration product in the generic CVISN state system design. Requirements from the COACH Part 1 are allocated to specific products in table 3.3.

IFTA

International Fuel Tax Agreement systems. See Reference 13. Usually split into two systems, one that handles registration and one that processes fuel tax returns. The IFTA is a registration reciprocity agreement among states of the United States and provinces of Canada that provides for payment of fuel taxes on the basis of fuel used in various jurisdictions. Carriers pay fuel taxes to the various jurisdictions in which fleet vehicles are operated by registering and filing tax returns through a base state. Only one fuel use license is issued for each carrier when registered under the Agreement. In the generic CVISN state design, in addition to the normal IFTA functions, the IFTA Registration system also provides carrier snapshot updates.

IRP

International Registration Plan systems. See Reference 14. The International Registration Plan is a registration reciprocity agreement among states of the United States and provinces of Canada that provides for payment of interstate vehicle license fees on the basis of fleet miles operated in various jurisdictions. License fees are paid to the various jurisdictions in which fleet vehicles are operated through a base state. Only one license plate and one cab card is issued for each fleet vehicle when registered under the Plan. A fleet vehicle is known as an apportionable vehicle and such vehicle, so far as registration is concerned, may be operated both interjurisdictionally and intrajurisdictionally. In the generic CVISN state design, in addition to the normal IRP functions, the IRP system also provides carrier and vehicle snapshot updates.

Intrastate Vehicle Registration

These systems register commercial vehicles that normally operate within the state. In the generic CVISN state design, in addition to the normal intrastate vehicle registration functions, the system also provides vehicle snapshot updates.

Credentialing Interface

The Credentialing Interface provides a convenient interface within the state to accept electronic credentialing application inputs from carriers, and to provide responses from state systems to carriers. As such, it is the focal point for credential and tax interaction with the carriers.

- Uses EDI ASC X12 standards for external interfaces,
- Acknowledges receipt of valid EDI transactions,
- Archives transactions,
- Does preliminary syntax checks on received transactions,
- Allows for optional manual review of transactions,
- Routes applications to the appropriate state credentialing system,
- Routes responses to the carrier,
- Supports electronic screening enrollment functions by updating carrier and vehicle snapshots with carrier's requests to participate in electronic screening programs.

A state may choose to extend the CI to perform some other function(s) normally allocated to another system, e.g., updating snapshot segments with credentials information.

Treasury

In this context, the State's Treasury system processes electronic payments. The Treasury system provides payment information to the credentialing system for which the fee/tax is paid. Various electronic payment methods are possible. States authorize electronic payment methods depending on regulations, capabilities, and experiences with individual payers.

Titling

Title new and used vehicles. In the generic CVISN state design, in addition to the normal titling functions, the Titling system will also provide vehicle snapshot updates.

CDL/DL

Issue Commercial Driver's License/ Driver's License. In the generic CVISN state design, in addition to the normal licensing functions, the system will also provide driver snapshot updates.

Web CAT

State WWW site support for electronic credentialing. Some CVISN Model Deployment states are exploring Internet-based credentialing solutions. In those states, the carrier's credential applications will be submitted to the Web CAT via an Internet browser. The Web CAT is expected to provide input screens and perform initial data checks. The Web CAT would pass the application data, normally in EDI format, to the Credentialing Interface, which would then route the application to the appropriate legacy system. The response from the legacy system would be returned to the carrier via the CI and Web CAT.

HazMat

Hazardous Material registration and permitting. Provides for registration to carry HazMat and issues HazMat permits. In the generic CVISN state design, in addition to the normal HazMat functions, the HazMat system also provides carrier snapshot updates.

OS/OW

Issue Oversize/Overweight permits. In the generic CVISN state design, in addition to the normal OS/OW functions, the OS/OW permitting system also provides carrier and vehicle snapshot updates.

E-Screening Enrollment

This system is being prototyped in a few of the CVISN Model Deployment states. It will collect and evaluate requests from carriers to participate in electronic screening. It will provide the carrier with a mechanism to enroll in multiple electronic screening programs with a single application.

- Support the addition or removal of carriers and vehicles from e-screening programs
- For own jurisdiction, evaluate carrier according to published criteria
- Update carrier snapshot to show jurisdiction's acceptance/rejection
- Update vehicle snapshots to show jurisdiction's acceptance/rejection of carrier that is associated with vehicle

See the CVISN Guide to Electronic Screening [Reference 10] for further information.

Allocation of State Electronic Screening Systems Design Requirements

The paragraphs in this section describe the functions of each Electronic Screening System product in the generic CVISN state system design. Requirements from the COACH Part 1 are allocated to specific products in table 3.4.

Each station's design is unique because of:

- State policy & practices
- Traffic flow, volume, & number of lanes
- Available site space
- Legacy system characteristics
- Existing proprietary solutions
- Vintage of roadside and communications equipment
- Resources available for making changes

In the generic design, the Electronic Screening System functions are allocated as shown below.

Screening

Make pass/pull-in decision.

- Interface to sensor/driver communications system
- Interface to Roadside Operations system (get snapshot summaries, send sensor data, send screening results)
- Sort vehicles on mainline or ramp, using: sensor data, snapshot data, availability of inspector, operator configuration selections
- Output screening results to tag via DSRC (includes driver notification)
- Control screening messages and signal lights
- Configure screening based on operator control (via Roadside Operations system) data
- Track vehicle through facility via tracking loops

Roadside Operations

Process snapshots and control site traffic.

- Interface to CVIEW – get snapshot data
- Support legacy operator interfaces (Static Scale, CDLIS, NLETS, Traffic Flow)
- Control “pull around back” messages and signal lights
- Interface to electronic screening (send criteria, get screening results, get sensor data, send snapshot summaries)
- Interface to report activities from other roadside systems to infrastructure, and vice versa

-
- On request, retrieve report data and display
 - Process snapshot data into local database
 - Track position of each vehicle moving through the station
 - Allow operators to set/view screening criteria
 - Display sensor data to operator
 - Display snapshot data to operator
 - Display vehicle position data to operator (e.g. mainline, ramp, scale lane, inspection area)

Sensor/Driver Communications

Process vehicle measures and communicate via DSRC with driver.

- Weigh In Motion/Automatic Vehicle Classification
- Automatic Vehicle Identification (via DSRC)
- In-cab notification (via DSRC)
- Height detectors
- Static scales
- Variable message signs
- Signal lights

Appendix C – COACH PART 4

**Intelligent Transportation Systems (ITS)
Commercial Vehicle Operations (CVO)**

**CVISN Operational and Architectural
Compatibility Handbook (COACH)**

Part 4

Interface Specification Checklists

Draft Version

POR-97-7067 D1.0

April 1999

Please note that this is a Preliminary Issue

It is important to note that this is a preliminary document. All sections included are complete and have been reviewed by JHU/APL, but not by other DOT contractors or state/federal government agencies. The purpose of this issue is to obtain comments and feedback on this document from those external organizations before a baseline version is published.

Note: This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from the JHU/APL CVISN site on the World Wide Web. The URL for the CVISN site is: <http://www.jhuapl.edu/cvisn/>

Review and comments to this document are welcome. Please send comments to:

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**CVISN Operational and Architectural Compatibility Handbook (COACH)
Part 4 – Interface Specification Checklists**

Introduction

The CVISN Operational and Architectural Compatibility Handbook (COACH) provides a comprehensive checklist of what is required to conform with the Commercial Vehicle Information Systems and Networks (CVISN) operational concepts and architecture. It is intended for use by state agencies with a motor carrier regulatory function and by motor carriers. It is also intended to provide a quick reference for developers of CVISN Core Infrastructure systems.

COACH Structure

The COACH is divided into 5 parts:

Part 1 - Operational Concept and Top-Level Design Checklists

Part 2 - Project Management Checklists

Part 3 - Detailed System Checklists

Part 4 - Interface Specification Checklists

Part 5 - Interoperability Test Criteria

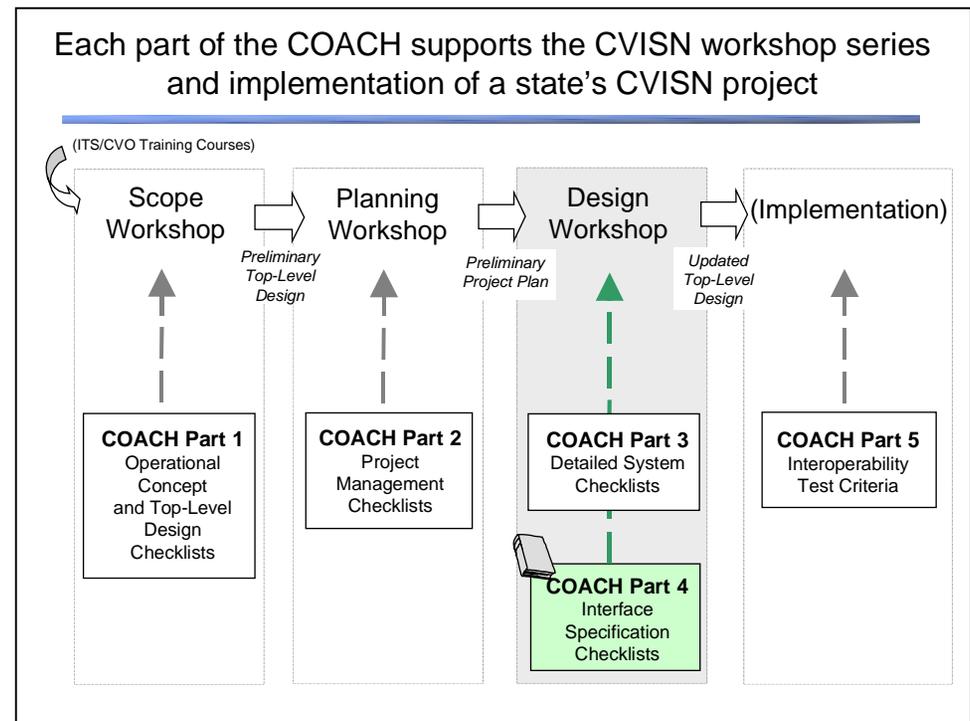
Parts 1 [References 2, 3], 2 [Reference 4], and 5 [Reference 6] are available in preliminary form at the Browse and Download Documentation; Architecture section of the JHU/APL CVISN web site <http://www.jhuapl.edu/cvo/>. Part 3 [Reference 5] will be published as draft in 1999.

COACH Part 4 Interface Specification Checklists Description

This volume is Part 4. Part 4 includes several types of checklists related to interfaces:

- Standard Interface Identification Tables, identifying the standardized interfaces to be used between pairs of products [Chapter 2].
- Standard Data Definitions, specifying data format and meaning conventions for items common to more than one standard interface [Chapter 3].
- References, a list of standards and recommended practices related to ITS/CVO interfaces [Chapter 4].

Figure 10-6 The COACH supports the workshops

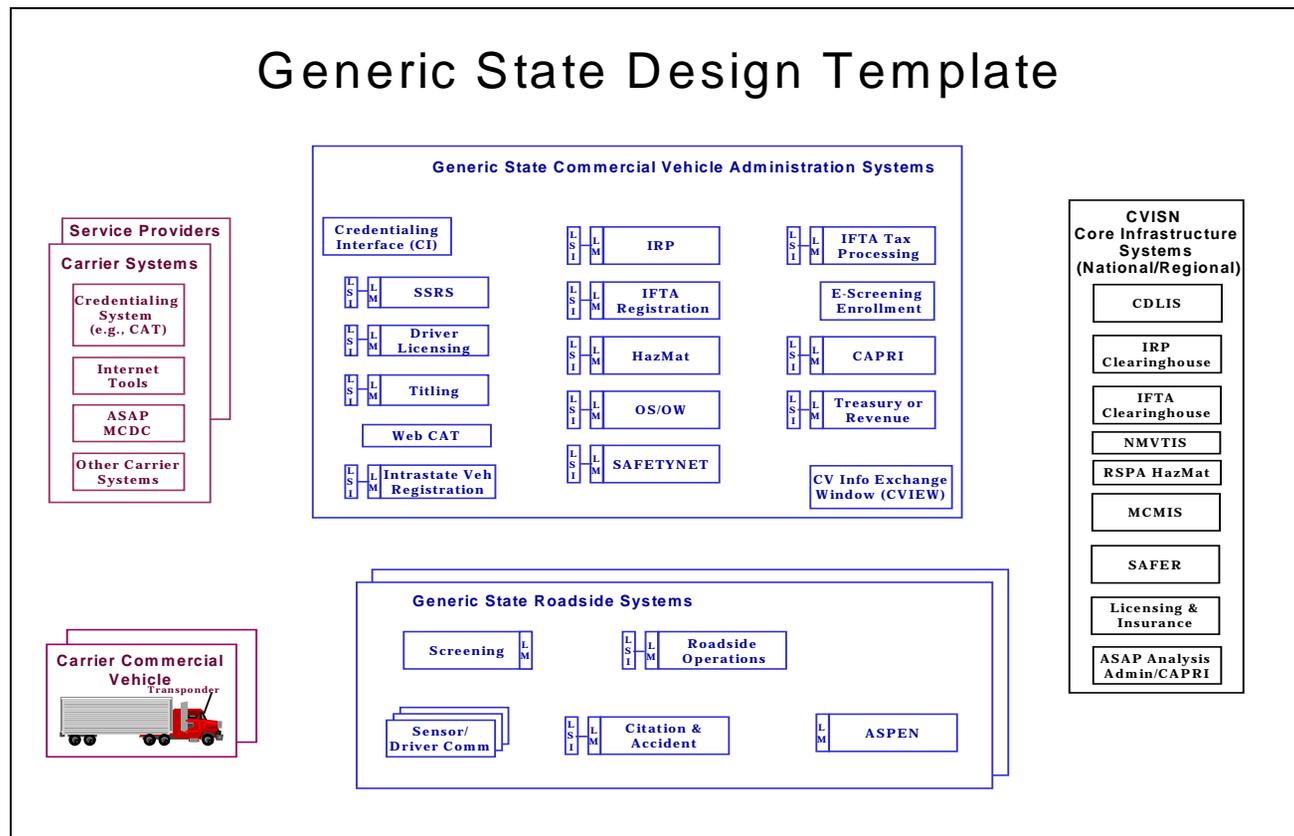


In Part 4, the checklists are intended to be used to indicate which items the reader agrees with, and to provide a mechanism for planning development activities. Each state should maintain a master filled-in copy of the COACH.

Generic State CVISN System Design

Figure 1-2 below depicts the generic CVISN state system design template. Material in this document is based upon this generic design. Products equivalent to the carrier and state products shown may be substituted in the design. For example, a state may choose to combine the HazMat and Oversize/Overweight permitting functions into one product. In that case, the interfaces specified would apply to the combined product rather than to two distinct products.

Figure 10-7 Generic State Design Template



The systems shown in the generic design are defined in the CVISN Glossary [Reference 1]. The generic design represents the main elements and interfaces needed for a state to implement the CVISN architecture. Each state will adapt the generic

design to accommodate their existing (legacy) systems, and to meet their own unique needs. The generic design is explained in more detail in the COACH Part 3 [Reference 5].

Use of standardized Electronic Data Interchange (EDI) and Dedicated Short Range Communications (DSRC) interfaces is required for architecture conformance. Each state chooses whether to modify a legacy system (LM - legacy modification) to support EDI (and other new functions and interfaces), or to create a Legacy System Interface (LSI) to deal with the EDI-to-native form interface. Many CVISN states are implementing a mix of LSIs and LMs. Throughout this document, the generic state system design is based on choosing to modify the legacy systems (i.e., implement LMs).

In the generic design depicted here, the legacy credentials systems update the appropriate snapshot segments in CVIEW using EDI. The inspection system in the generic state design is ASPEN. In this design, the Roadside Operations subscribes to CVIEW to receive snapshots. ASPEN subscribes to SAFER to receive snapshots. The CVIEW-Roadside Operations connection is an EDI interface. The SAFER-ASPEN interface uses the “application file format” that corresponds to a file format that could be input into an EDI translator. As of March 1999, ASPEN does not handle EDI, due to the expense of equipping several hundred ASPEN units with commercial translators.

To achieve interoperability, the CVISN architecture calls for the use of open standards for carrier-state and state-state (via the CVISN Core Infrastructure) interfaces. Interfaces that are wholly within a state government’s control (e.g., between state agencies) are not required to use open standards. Most CVISN Model Deployment States have chosen to use open standards for some within-state interfaces, and have chosen to use existing custom interface agreements for others. For example, some states have chosen to implement LSIs instead of modifying their existing IRP or IFTA products. They are implementing the LSIs as small applications running on the same computer as the Credentialing Interface (CI). For those states, there are no EDI interfaces between the CI and their existing IRP or IFTA systems. Some of those states have also decided that the CI will provide snapshot segment updates of credentials data to CVIEW on behalf of the IRP or IFTA systems. In this document we depict one generic design for simplicity. The generic design shown here maximizes the use of open standards. Other designs are also acceptable under the CVISN architecture. Refer to the technical volumes of the CVISN Guide series for further information [References 16-19].

How States Should Use This Document

The COACH summarizes key concepts and architectural guidelines for CVISN. This version of the COACH Part 4 focuses on topics important to states. The COACH Part 1 defines the CVISN Level 1 criteria. This document identifies the detailed interface requirements associated with CVISN Level 1.

To gain a more complete understanding of CVISN, state planners and designers should read the Introductory Guide to CVISN [Reference 20], other parts of the COACH [References 2-6], and the CVISN System Design Description [Reference 15]. This version of the COACH Part 4 is intended to be a working document that is used for designing modifications and enhancements to

existing state systems, and for planning the development of new systems in each user's state. This document will be used in the planned CVISN workshops.

The key concepts and architectural guidelines for CVISN states have been summarized in this document in a series of checklist tables. Each table in this document consists of these columns, unless otherwise noted:

- Commit Level (F/P/N) – the state's commitment level to the item
Using the first column of each checklist entry, a **commitment level should be filled in** by the state. There are three possible levels of commitment:
 - (F) This rating indicates a full commitment. This level means that at least 80% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist item statement.
 - (P) This rating indicates a partial commitment. This level means that between 50% and 80% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist item statement.
 - (N) This rating indicates no commitment. This level means that less than 50% of the state's systems involved in the process implied by the checklist item are or intend to be compatible with the checklist statement.

 - Reqs Level - the compatibility requirement level assigned to this compatibility criterion by the FHWA CVISN project team
For a state to be "compatible with CVISN," it must implement selected items in the checklists. To distinguish those items, the CVISN project team has assigned a **compatibility requirement level** to each checklist item:
 - (L1) This rating identifies a CVISN Level 1 compatibility requirement.
 - (E) This rating indicates an enhanced level of CVISN compatibility. These items may require a little longer to complete (3-4 years).
 - (C) This rating indicates a complete level of CVISN Compatibility. Satisfying all these provides complete CVISN compatibility. These items are expected to require a longer-range (5 or more years) time frame.

States are expected to focus initially on checklist items with an *L1* compatibility requirement level rating. Making a *partial commitment* indicates that the state will at least demonstrate the feasibility of that concept or architectural guideline. Making a *full commitment* indicates that the state will fully implement the concept or architectural guideline and be ready for the next steps.

 - Comments – available for the state to refer to another document or plan, note a question, record a clarifying comment, etc.
-
-

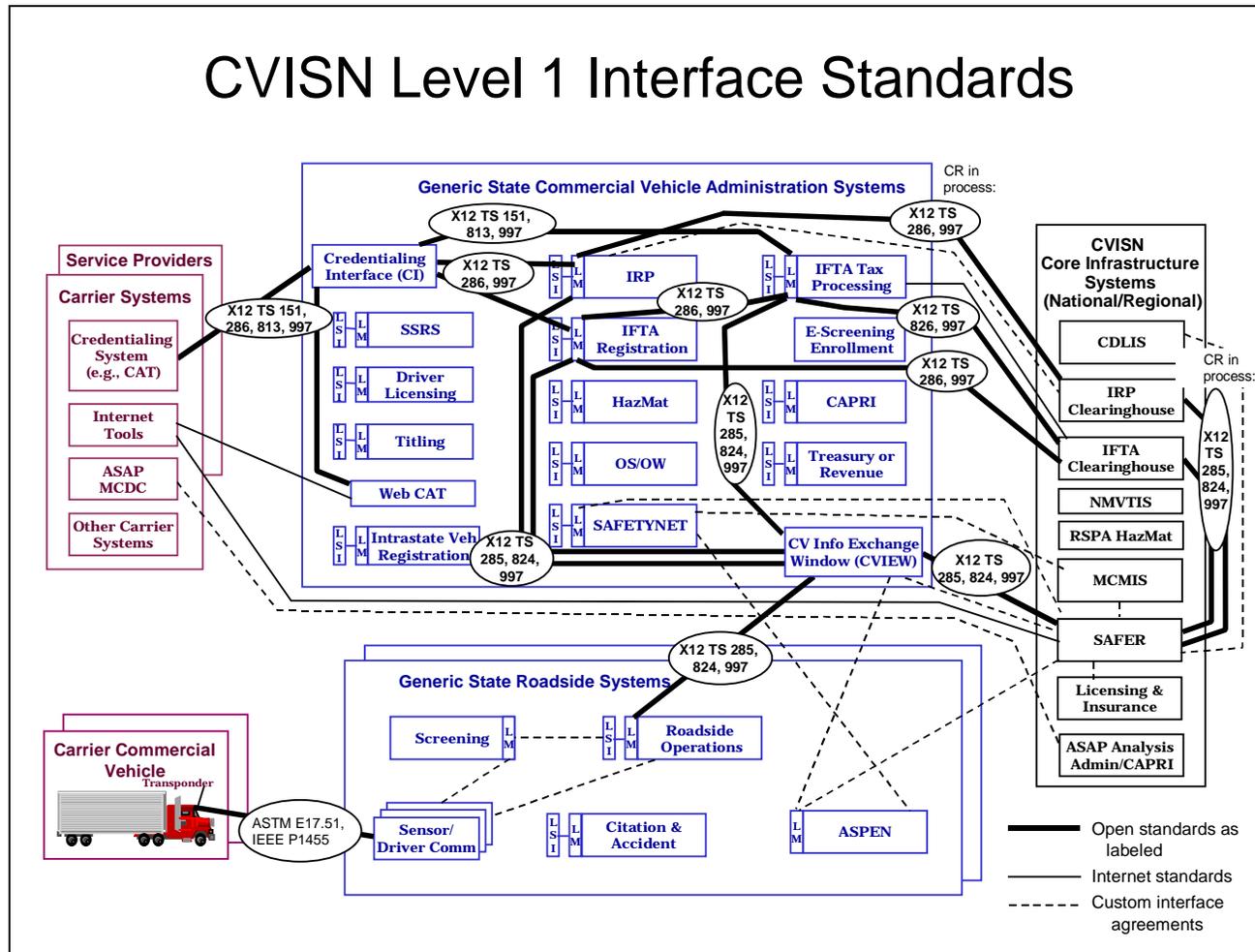
If the state maintains its master copy of this document electronically, the following conventions are recommended when filling in the columns to illustrate the “firmness” of the state’s plan:

- *Italics type* : Tentative, not approved by the final decision makers
- Regular type : Approved by the decision makers (or supported by consensus)
- **Bold type** : Completed

States are to fill out the “Commit Level” column for the tables prior to attending the CVISN Design Workshop. Standard interface identification

Figure 2-1 shows all the CVISN Level 1 interface standards overlaid onto the generic state design template. The **open standards shown in the ovals** are listed below:

Figure 10-8 CVISN Level 1 Interface Standards



ANSI ASC X12 EDI Standard Transaction Sets

These are the ANSI EDI standards used in CVISN applications. A subset of these transactions is used to support Level 1 capabilities.

TS 150 Tax Rate Notification

TS 151 Electronic Filing of Tax Return Data Acknowledgement

TS 284 CV Safety Reports (available for non-ASPEN inspection systems)

TS 285 CV Safety & Credentials Information Exchange (snapshots)
TS 286 Commercial Vehicle (CV) Credentials
TS 813 Electronic Filing of Tax Return Data
TS 820 Payment Order/Remittance Advice
TS 824 Application Advice
TS 826 Tax Information Exchange
TS 997 Functional Acknowledgement

The EDI standards are available for purchase from the Data Interchange Standards Association (DISA), Inc., 1800 Diagonal Road, Suite 200, Alexandria, VA 22314-2852; email publications@disa.org; phone 1-888-363-2334; web site <http://www.disa.org/>. As of the publication of this document, Reference 7 is the current standard.

FHWA is sponsoring the development of several Implementation Guides (IGs) on how to use the EDI transaction sets for CVO applications. To date, JHU/APL has developed IGs for TS 285, TS 286 (IRP, IFTA, OS/OW), as well as a FHWA Code Directory. JHU/APL also plans to develop IGs for other 286 applications, and for TS 284 and 824. See the Browse and Download Documentation; EDI Implementation Guides section of the JHU/APL CVISN web site <http://www.jhuapl.edu/cvo/> for the latest implementation guides. For information about the transaction sets related to tax filing, see <http://www.taxadmin.org/>.

DSRC-Related Standards

ASTM E17.51 Physical & Data Link Layers
IEEE P1455 Message Set

The DSRC standards are still in the approval cycle. For current status information, see <http://www.its.dot.gov/standard/standard.htm>.

These ANSI and DSRC open standards are the ones that states implementing CVISN capabilities should adopt.

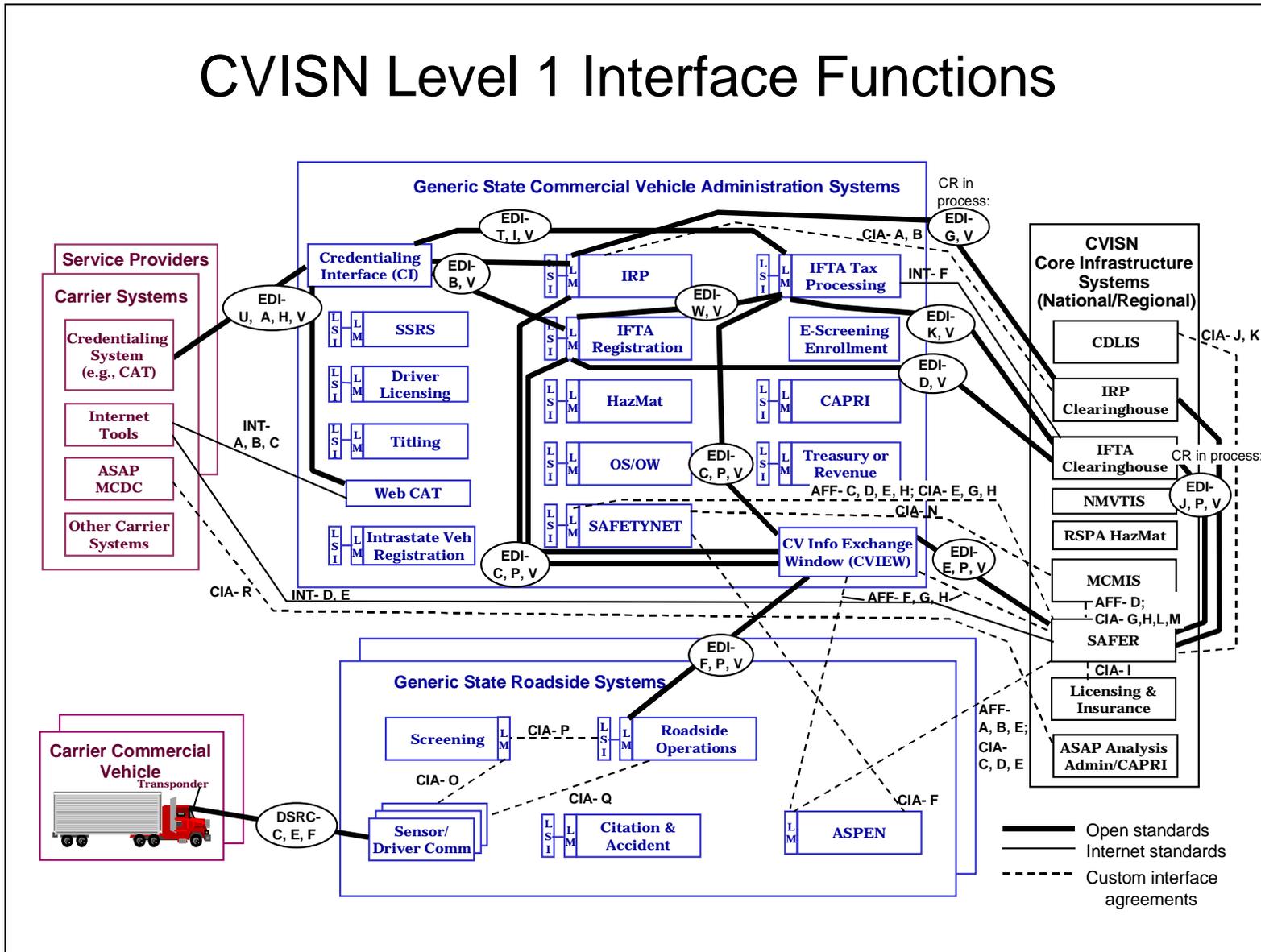
The interfaces between carrier's Internet browsers and various World Wide Web applications use Internet standards. See <http://www.w3.org/> for information about Internet standards.

The interfaces between FHWA-developed safety-related systems (ASPEN and SAFER, ASPEN and CVIEW, SAFER and SAFETYNET, SAFER and MCMIS, SAFER and Licensing & Insurance) are based on custom interface agreements defined by the system developers and endorsed by FHWA. Under special circumstances, FHWA tolerates, but does not encourage, the use of custom interface agreements for interchanges between systems operated under different "jurisdictions".

The purposes of the interfaces are explained in the remainder of this section.

In Figure 2-2, the standard names (e.g., X12 TS 286) have been replaced with letters. The letters correspond to particular functions as illustrated in the table that follows.

Figure 10-9 CVISN Level 1 Interface Functions



The checklist table below, Table 2-1, explains the purpose for each standardized interface shown in Figure 2-2. In addition to the standard column definitions explained in section 1.4, this table contains these columns:

- Label – the identification shown in Figures 2-2
- Std – the open standard or custom interface agreement to which the label refers and references that contain details of the standard and how to implement it
- Interface Purpose - summary versions of the interface exchanges expected, culled from other CVISN documentation
- From System – based on the generic design, the system that will send the information listed in the Interface Purpose column
- To System – based on the generic design, the system that will receive the information listed in the Interface Purpose column

There are more interfaces listed in the table than are shown on the drawings. Those additional interfaces correspond to enhanced or complete capabilities, as indicated by the “Req Level” column. For details about implementing the standardized interfaces, review the standards and implementation guides.

If the ‘Req Level’ cell is in *italics*, it means that the capability will be supported during the Level 1 timeframe, but is not yet available as of March 1999.

There are several connection paths shown for ASPEN and SAFETYNET. They represent the capabilities planned as the products evolve to more powerful computers and more sophisticated software. Details of the evolution paths will be included in the CVISN Guide to Safety Information Exchange [Reference 17].

The categories of interfaces shown on Figure 2-2 and in Table 2-1 are:

- EDI – Electronic Data Interchange; ANSI X12 standards
- DSRC – Dedicated Short-Range Communications; IEEE and ASTM standards
- AFF – Application File Format; data structured in a format that is a precursor to an EDI exchange
- INT – Internet; HTML standards
- CIA – Custom Interface Agreement; data exchanged according to a particular custom interface agreement

In some cases EDI is specified as the interface between systems. There are ten ANSI X12 EDI standard transaction sets that are used in CVISN applications. These transaction sets are listed below. Note: TS stands for *Transaction Sets*.

TS 150	Tax Rate Notification
TS 151	Electronic Filing of Tax Return Data Acknowledgement
TS 284	CV Safety Reports (available for non-ASPEN inspection systems)

TS 285	CV Safety & Credentials Information Exchange (snapshots)
TS 286	Commercial Vehicle (CV) Credentials
TS 813	Electronic Filing of Tax Return Data
TS 820	Payment Order/Remittance Advice
TS 824	Application Advice
TS 826	Tax Information Exchange
TS 997	Functional Acknowledgement

In addition to EDI, DSRC-standards are included in CVISN. These standards are based upon the ASTM E17.51 physical and data link layers and the IEEE P1455 message set

Beyond EDI and DSRC there are other interfaces that can be used for interfacing CVISN systems. These interfaces are custom interface agreement, the native Application File Format supported by ASPEN, CVIEW, and SAFER, or Internet (e.g. HTML/CGI). The interfaces between CVISN components are given in column two of the tables based upon the following definitions.

- EDI ANSI X12 Electronic Data Interchange transactions.
- CIA Custom Interface Agreement.
- AFF Application File Format.
- DSRC Dedicated Short-Range Communication.
- INT Internet “standards” such HTML coupled with CGI scripts or ISAPI extensions.
- XML extensible markup language
- XHTML extensible hypertext markup language
- Agents message or broker technologies
- Std the open standard or custom interface agreement to which the label refers and references that contain details of the standard and how to implement it

Standard Interface Identification Table

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
P* – will also consider XML or other standards	EDI-A	TS 286 Ref 7, 9, 11, 12, 14	Commercial Vehicle (CV) Credentials: <ul style="list-style-type: none"> • Submit initial/renewal/supplemental electronic application for credentials • Submit trip permit application • Notify payee of payment method • Submit corrected application • Send renewal notice • Return credentials data to applicant • Return temporary credential • Return trip permit • Notify payer of fees due • Reject application 	CAT (or WebCAT) CAT (or WebCAT) CAT (or WebCAT) CAT (or WebCAT) CI CI CI CI CI CI CI	CI CI CI CI CI CI CI CI CI CI	L1; E	L1 = IRP & IFTA E = other credentials
P*	EDI-B	TS 286 Ref 7, 9, 11, 12, 14	CV Credentials: <ul style="list-style-type: none"> • Pass application to legacy system • Return credentials data • Return temporary credential • Return trip permit • Report fees due • Reject application 	CI Legacy admin system Legacy admin system Legacy admin system Legacy admin system Legacy admin system	Legacy admin system CI CI CI CI CI	L1; E	L1 = IRP & IFTA E = other credentials
P*	EDI-C	TS 285 Ref 7, 13-14	CV Safety & Credentials Information Exchange: <ul style="list-style-type: none"> • Update snapshot segment • Request carrier, vehicle, or driver information (i.e. request a snapshot view) • Respond to carrier, vehicle, or driver information request or fulfill subscription (i.e. send one or more snapshots using a particular view) 	Legacy admin system (or CI) Legacy admin system (or CI) CVIEW	CVIEW CVIEW Legacy admin system (or CI)	L1; C	L1 = carrier & vehicle C = driver

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
N/A	EDI-D	TS 286 Ref 7, 11, 14	CV Credentials: <ul style="list-style-type: none"> • Submit application data • Retrieve demographic data from Clearinghouse for review 	State IFTA Registration IFTA Clearinghouse	IFTA Clearinghouse State IFTA Registration	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	EDI-E	TS 285 Ref 7, 13-14	CV Safety & Credentials Information Exchange: <ul style="list-style-type: none"> • Update snapshot segment • Request carrier, vehicle, or driver information (i.e. request a snapshot view) • Respond to carrier, vehicle, or driver information request or fulfill subscription (i.e. send one or more snapshots using a particular view) • Update snapshot segment 	CVIEW CVIEW SAFER SAFER	SAFER SAFER CVIEW CVIEW	L1; C	L1 = carrier & vehicle C = driver
P*	EDI-F	TS 285 Ref 7, 13-14	CV Safety & Credentials Information Exchange <ul style="list-style-type: none"> • Request carrier or vehicle information (i.e. request a snapshot view) • Respond to carrier or vehicle information request (i.e. send one or more snapshots using a particular view) 	Roadside Operations CVIEW	CVIEW Roadside Operations	L1; C	L1 = carrier & vehicle C = driver
N/A	EDI-G	TS 286 Ref 7, 10, 14	CV Credentials: <ul style="list-style-type: none"> • Summarize fees billed and/or collected by a jurisdiction, and the portion due to other jurisdictions (netting/transmittal) • Provide recaps for retention and/or review • Provide recaps 	IRP Clearinghouse IRP Clearinghouse State IRP System	State IRP System State IRP System IRP Clearinghouse	L1 L1 E	NOTE: Change request in process for EDI interfaces, Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N/A	EDI-H	TS 813 Ref 7, 35	Tax Return: <ul style="list-style-type: none"> • File electronic IFTA tax return 	CAT (or WebCAT)	CI	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N/A	EDI-I	TS 813 Ref 7, 35	Tax Return: <ul style="list-style-type: none"> • Pass tax return to IFTA tax return processing system 	CI	State IFTA Tax Processing System	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
N/A	EDI-J	TS 285 Ref 7, 13-14	CV Safety & Credentials Information Exchange: <ul style="list-style-type: none"> Update snapshot segment 	IFTA or IRP Clearinghouse	SAFER	L1	NOTE: Change request in process for this to be implemented on behalf of states that belong to clearinghouse but are not yet CVISN states
N/A	EDI-K	TS 826 Ref 7, 36	Tax Information Exchange: <ul style="list-style-type: none"> Send data on fuel tax filings among jurisdictions; summarize detailed tax information from individual returns and balance due/owed (netting and pre-netting summaries) 	IFTA Clearinghouse	State IFTA Tax Processing System	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	EDI-L	TS 150 Ref 7, 34	Tax Rate Notification <ul style="list-style-type: none"> Send latest IFTA tax rates 	CI	CAT or WebCAT	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	EDI-M	TS 284 Ref 7, 14, 31	CV Safety Reports (Inspection Report) <ul style="list-style-type: none"> Submit safety report Request safety report Respond to safety report request 	CVIEW CVIEW SAFER	SAFER SAFER CVIEW	L1	(not shown on figures; to support non-ASPEN Inspection systems)
F	EDI-N	TS 284 Ref 7, 14, 31	CV Safety Reports (Inspection Report) <ul style="list-style-type: none"> Submit original safety report Request safety report Respond to safety report request 	non-ASPEN Inspection system non-ASPEN Inspection system CVIEW	CVIEW CVIEW non-ASPEN Inspection system	L1	
F	EDI-O	TS 284 Ref 7, 14, TBD	CV Safety Reports (Crash Data) <ul style="list-style-type: none"> Submit original safety report 	Citation & Accident	SAFETYNET 2000 via CVIEW & SDM	C	SDM = SAFER Data Mailbox
F	EDI-P	TS 824 Ref 7, 14, TBD	Application Advice <ul style="list-style-type: none"> Acknowledge successful processing of TS 285 update message data Report errors in processing of TS 285 update message data 	receiver of 285 receiver of 285	sender of 285 sender of 285	L1	
N/A	EDI-Q	TS 150 Ref 7, 34	Tax Rate Notification <ul style="list-style-type: none"> Send latest IFTA tax rates 	State IFTA Tax Processing System	CI	E	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
	EDI-R		<i>reserved</i>				

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	EDI-S	TS 820 Ref 7	Payment Order/Remittance Advice : <ul style="list-style-type: none"> Initiate EFT payment Report payment received 	payer state's bank	payer's bank State Treasury or Revenue system	E	
N/A	EDI-T	TS 151 Ref 7, 32	Electronic Filing of Tax Return Data Acknowledgement <ul style="list-style-type: none"> Report errors encountered when attempting to process IFTA tax return (813) 	State IFTA Tax Processing System	CI	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
N	EDI-U	TS 151 Ref 7, 32	Electronic Filing of Tax Return Data Acknowledgement <ul style="list-style-type: none"> Pass IFTA tax return error message Pass IFTA tax return successfully processed message 	CI CI	CAT (or WebCAT) CAT (or WebCAT)	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	EDI-V	TS 997 Ref 7, 33	Acknowledge	all EDI-receiving systems	all EDI sending- systems	L1	
N/A	EDI-W	TS 286 Ref 7, 11, 14	CV Credentials: <ul style="list-style-type: none"> Submit application data (complete or subset; demographic information) 	State IFTA Registration System	State IFTA Tax Processing System	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	EDI-X	TS 284 Ref 7, 14, 31	Inspection Report <ul style="list-style-type: none"> Fulfill inspection report subscription Query for inspection report Respond to inspection query 	SAFER Law Enforce User SAFER	Law Enforcement User SAFER Law Enforce User	L1	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	DSRC	various	<p>According to draft US DOT policy,</p> <ul style="list-style-type: none"> • For the immediate future, all CVO and Border crossing projects will continue to utilize the current DSRC configuration employed by the programs. This is the ASTM 1 version 6, ASTM 2 version 6 active tag. • Beginning January 1, 2001, all CVO and Border Crossing projects will use an active configuration that is backward compatible with the current configuration and yet consists of the following: <ul style="list-style-type: none"> A. ASTM 2 version 6 defines the data link layer. B. The IEEE P1455 application layer standard and the ASTM 1 version 7 active physical layer standard will be implemented. 				
F	DSRC-A	IEEE P1455 Ref 24	<p>CV Electronic Screening Message Set</p> <ul style="list-style-type: none"> • CV Screening Identification 	Transponder	Screening/Driver Comm	E	
F	DSRC-B	IEEE P1455 Ref 24	<p>CV Screening Message Set</p> <p>All messages</p>	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	C	
F	DSRC-C	IEEE P1455 Ref 24	<p>CV Border Clearance Message Set</p> <ul style="list-style-type: none"> • Trip Identification Number message 	Transponder	Screening/Driver Comm	L1	
F	DSRC-D	IEEE P1455 Ref 24	<p>CV Border Clearance Message Set</p> <p>All messages</p>	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	C	
F	DSRC-E	ASTM 17.51 Veer. 6 Ref 23	ASTM 2 Data Link Layer (Level 2 in OSI model)	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	L1	
F	DSRC- F	ASTM 17.51 Veer 6 Ref 22	ASTM 1 Physical Link Layer (Level 1 in OSI model)	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	L1	
F	DSRC-G	ASTM 17.51 Veer 7 Ref 30	ASTM 1 Physical Link Layer (Level 1 in OSI model)	Transponder or Screening/Driver Comm	Screening/Driver Comm or Transponder	E	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	AFF-A	application file format Ref 25	Snapshot <ul style="list-style-type: none"> • Fulfill snapshot subscription • Query for snapshot(s) • Response to query 	SAFER ASPEN-32 SAFER	ASPEN-32 SAFER ASPEN-32	L1	
F	AFF-B	application file format Ref 25	Inspection Report <ul style="list-style-type: none"> • Submit original inspection report • Query for inspection report • Respond to inspection query 	ASPEN-32 ASPEN-32 SAFER	SAFER SAFER ASPEN-32	L1	
F	AFF-C	application file format Ref 25	Snapshot <ul style="list-style-type: none"> • Fulfill snapshot subscription • Query for snapshot(s) • Response to query 	SAFER SAFETYNET 2000 SAFER	SAFETYNET 2000 SAFER SAFETYNET 2000	L1	
F	AFF-D	application file format Ref 25	Inspection Reports, Compliance Reviews, Crash Data, Enforcement Data <ul style="list-style-type: none"> • Update request (upload and store) • Update confirmation (confirm success) 	SAFETYNET 2000 MCMIS via SDM	MCMIS via SDM SAFETYNET 2000	L1	SDM = Safer Data Mailbox
F	AFF-E	application file format Ref 25	Inspection Report <ul style="list-style-type: none"> • Submit original inspection report 	ASPEN-32	SAFETYNET 2000 via SDM	L1	SDM = Safer Data Mailbox
F	AFF-F	application file format Ref 25	Snapshot <ul style="list-style-type: none"> • Fulfill snapshot subscription • Query for snapshot(s) • Response to query 	CVIEW ASPEN-32 CVIEW	ASPEN-32 CVIEW ASPEN-32	L1	
F	AFF-G	application file format Ref 25, 26	Inspection Report <ul style="list-style-type: none"> • Submit original inspection report 	ASPEN-32	SAFER via CVIEW	L1	
F	AFF-H	application file format Ref 25, 26	Inspection Report <ul style="list-style-type: none"> • Submit original inspection report 	ASPEN-32	SAFETYNET 2000 via CVIEW & SDM	L1	SDM = Safer Data Mailbox

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	INT-A	Internet Standards	Equivalent of Commercial Vehicle (CV) Credentials: <ul style="list-style-type: none"> • Submit initial/renewal/supplemental electronic application for credentials • Submit trip permit application • Notify payee of payment method • Submit corrected application • Send renewal notice • Return credentials data to applicant • Return temporary credential • Return trip permit • Notify payer of fees due • Reject application 	Internet Tools Internet Tools Internet Tools Internet Tools Web CAT Web CAT Web CAT Web CAT Web CAT Web CAT Web CAT	Web CAT Web CAT Web CAT Internet Tools Internet Tools Internet Tools Internet Tools Internet Tools Internet Tools	L1; E	L1 = IRP & IFTA E = other credentials
F	INT-B	Internet Standards	Equivalent of Tax Return: <ul style="list-style-type: none"> • File electronic IFTA tax return 	Internet Tools	Web CAT	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	INT-C	Internet Standards	Equivalent of Electronic Filing of Tax Return Data Acknowledgement <ul style="list-style-type: none"> • Pass IFTA tax return error message • Pass IFTA tax return successfully processed message 	Web CAT Web CAT	Internet Tools Internet Tools	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	INT-D	Internet Standards	Snapshots <ul style="list-style-type: none"> • Query for snapshot(s) • Response to query 	Internet Tools SAFER	SAFER Internet Tools	L1	
F	INT-E	Internet Standards	Inspection Reports <ul style="list-style-type: none"> • Query for inspection report • Respond to inspection query 	Internet Tools SAFER	SAFER Internet Tools	L1	
F	INT-F	Internet Standards	Tax Rate Notification <ul style="list-style-type: none"> • Send latest IFTA tax rates 	IFTA Clearinghouse	State IFTA Tax Processing System	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	CIA-A	custom interface agreement	Recaps	State IRP	IRP Clearinghouse	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	CIA-B	custom interface agreement	Netting/Transmittal data	IRP Clearinghouse	State IRP	L1	Storage, transfer and usage of IFTA and IRP data as necessary to meet CVISN Level 1 requirements
F	CIA-C	custom interface agreement Ref 25	Snapshots <ul style="list-style-type: none"> • Fulfill snapshot subscription • Query for snapshot(s) • Response to query 	SAFER ASPEN SAFER	ASPEN SAFER ASPEN	L1	
F	CIA-D	custom interface agreement Ref 25	Inspection Reports <ul style="list-style-type: none"> • Submit original inspection report • Query for inspection report • Respond to inspection query 	ASPEN ASPEN SAFER	SAFER SAFER ASPEN	L1	
F	CIA-E	custom interface agreement	Inspection Reports <ul style="list-style-type: none"> • Submit original inspection report 	ASPEN	SAFETYNET via SDM	L1	SDM = Safer Data Mailbox
F	CIA-F	custom interface agreement	Inspection Reports <ul style="list-style-type: none"> • Submit original inspection report 	ASPEN	SAFETYNET via electronic bulletin board	L1	
F	CIA-G	custom interface agreement Ref 25	Facsimile request Facsimile response	SAFETYNET MCMIS via SDM	MCMIS via SDM SAFETYNET	L1	SDM = Safer Data Mailbox

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	CIA-H	custom interface agreement Ref 25	F-report request F-report response	SAFETYNET MCMIS via SDM	MCMIS via SDM SAFETYNET	L1	SDM = Safer Data Mailbox
F	CIA-I	custom interface agreement Ref 25	Snapshot <ul style="list-style-type: none"> Update carrier snapshot segment 	Licensing & Insurance	SAFER	L1	
F	CIA-J	custom interface agreement Ref 25	Driver Status Report	CDLIS	SAFER	L1	
F	CIA-K	custom interface agreement Ref 25	Driver History Report	CDLIS	SAFER	L1	
F	CIA-L	custom interface agreement Ref 25	Snapshot <ul style="list-style-type: none"> Update carrier snapshot segment 	MCMIS	SAFER	L1	

Commit Level (F/P/N)	Label	Std	Interface Purpose	From System	To System	Reqs Level	Comments
F	CIA-M	custom interface agreement Ref 25	Inspection Reports, Compliance Reviews, Crash Data, Enforcement Data <ul style="list-style-type: none"> Provide past reports 	MCMIS	SAFETYNET	L1	
F	CIA-N	custom interface agreement Ref 25	Inspection Reports, Compliance Reviews, Crash Data, Enforcement Data <ul style="list-style-type: none"> Provide reports 	SAFETYNET	MCMIS	L1	
F	CIA-O	custom interface agreement	Sensor data Control data	Sensor/Driver Comm Screening	Screening Sensor/Driver Comm	L1	
F	CIA-P	custom interface agreement	Screening criteria, snapshot data Screening results	Roadside Operations Screening	Screening Roadside Operations	L1	
F	CIA-Q	custom interface agreement	Sensor data Control data	Sensor/Driver Comm Roadside Operations	Roadside Operations Sensor/Driver Comm	L1	
F	CIA-R	custom interface agreement	Report compliance data	ASAP Motor Carrier Data Collection	ASAP Analysis Administration	E	

Standard Data Definitions

Ideally, there would be a common data dictionary for use throughout all systems associated with CVISN. That is not the case, since many legacy systems have different data definitions, and new systems are being developed by different organizations. The data items listed in this section are common across more than one interface standard. They are used as “keys” to access information about the major entities: carrier, vehicle, driver, shipment, and trip. When systems use common keys, it is possible to match information sets such as safety and credentials data. The specifications in following table define the key identifier characteristics that will be adopted by Alaska. In addition to the column definitions of commitment level and CVISN requirement level the following table contains these columns:

Entity – Any person, place, thing, concept, or event that has meaning to an enterprise, and about which data can be stored.
(Example: vehicle)

Identifier Name – the name of the data element that should be standard across systems for the entity

Identifier Segment – a list of components that make up the data name, including whether the segment should be alphabetic, numeric, or alphanumeric

Number of Characters – the maximum length that should be supported for each segment

Commit Level (F/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqts Level	Comments
F	Motor Carrier	Primary Carrier ID e.g., For <i>interstate</i> carrier: MCI 12345 A001 (note that MCI is the code used for ID Type US DOT #) e.g., For intrastate carrier in a state using FEIN as the Primary Carrier ID for intrastate carriers: TJ US-CA 123456789 (note that TJ is the code used for ID Type FEIN)	ID Type (alphanumeric); if carrier is interstate, must be US DOT type code + Jurisdiction Code, if carrier is intrastate (alphanumeric) + Carrier-Specific Identifier corresponding to the ID type (alphanumeric); if carrier is interstate, must be US DOT number + Carrier terminal ID designated by carrier (alphanumeric)	3 (max) 5 (ISO-3166) 12 (max) 4 (max)	L1	

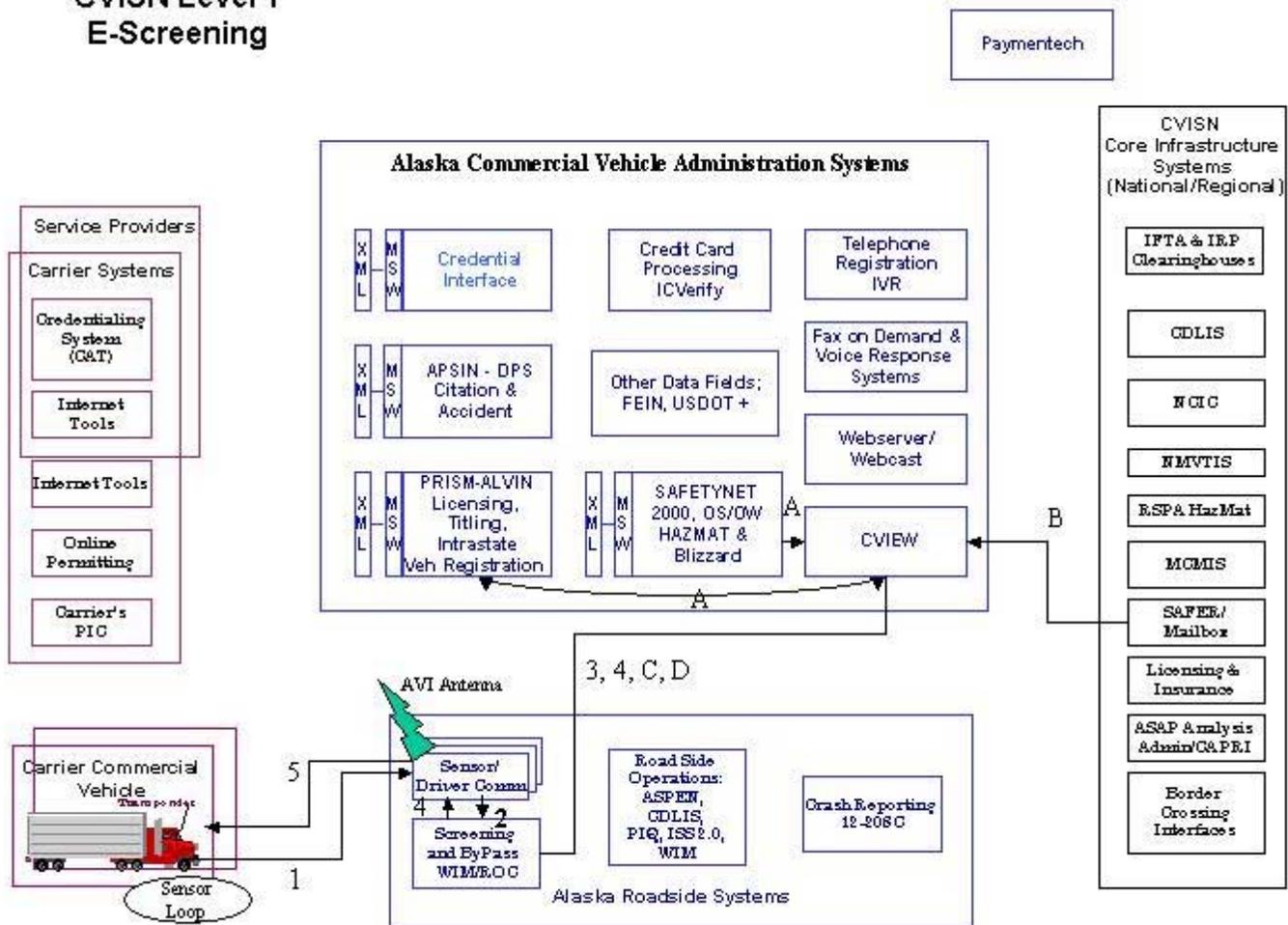
Commit Level (F/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqs Level	Comments
F	Vehicle	Vehicle Identification Number e.g., 1FDKE30F8SHB33184 and Vehicle Plate ID e.g., US CA 12345664820M	VIN assigned by manufacturer (alphanumeric) Country code + Jurisdiction (state or province) code (alphanumeric) + License plate ID (alphanumeric)	30 (max) 2 (using country code from ISO-3166) 2 (using subdivision code from ISO-3166) 12 (max)	L1	
F	Transponder	Transponder ID e.g., 0 123456789	Transponder ID Definition Flag (0=current; 1=IEEE P1455) + <i>If Transponder ID Definition Flag = current, then the other segment is:</i> Transponder Serial Number assigned by manufacturer <i>If Transponder ID Definition Flag = IEEE P1455, then the other segments are:</i> Manufacturer Identifier + Transponder Serial Number assigned by manufacturer	1 bit 32-bit unsigned integer 16 bits 20 bits	L1 E	
F	Driver	Driver Unique ID e.g., US MD B99999999999A	Country code + Jurisdiction (state or province) code (alphanumeric) +	2 (using country code from ISO-3166) 2 (using subdivision code from ISO-3166) 16 (max)	L1	

Commit Level (E/P/N)	Entity	Identifier Name	Identifier Segments	Number of Characters	Reqs Level	Comments
			Driver specific identifier (driver license number) assigned by jurisdiction (alphanumeric)			
F	Shipment	Shipment Unique ID e.g., 776655443322	Bill of Lading number assigned by the carrier (numeric)	12 (max)	C	
F	Trip	Trip/Load Number e.g., 123456789761231	Carrier DUNS number as assigned by Dun and Bradstreet (numeric) + Trip unique number as assigned by carrier (numeric)	9 6	E	

No one knows why this page is blank.

Appendix D – Operational Scenarios

E-screening

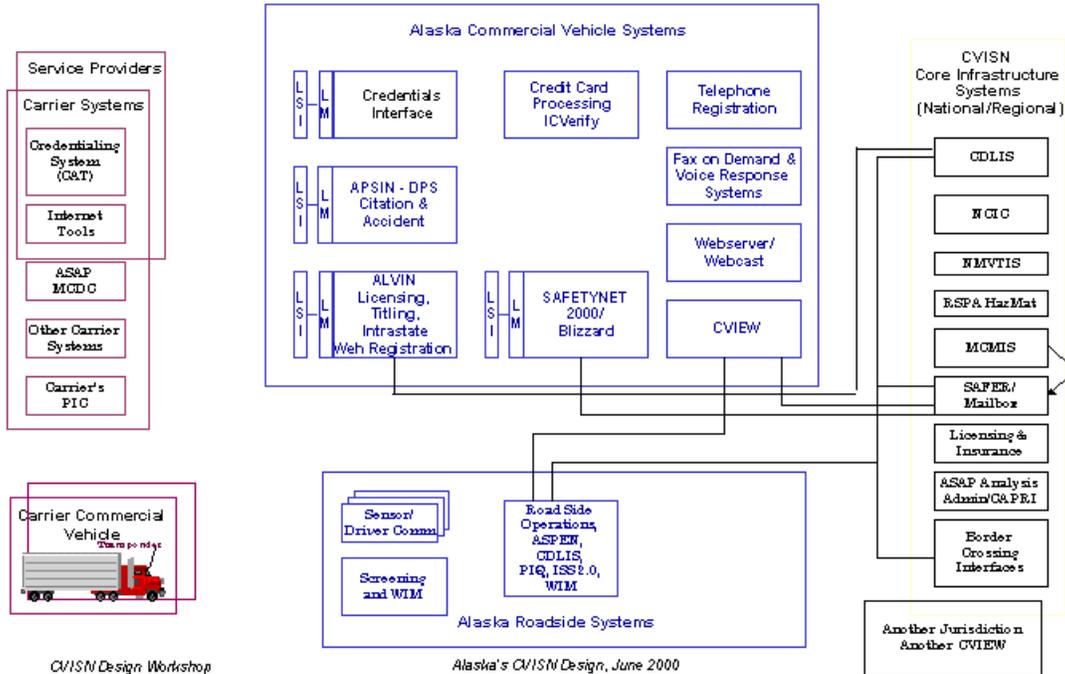
CVISN Level 1
E-Screening

1. Vehicle crosses sensor loops in the pavement and a message from the Automatic Vehicle Identification (AVI) reader, requesting the transponder ID is sent. Transponder ID is picked up by the AVI antenna in DSRC message format.
 2. Weigh-In-Motion (WIM) system weighs each axle and calculates spacing, using scales and axle sensors.
 3. Transponder ID is sent from the AVI reader to the roadside screening computer.
 4. Axle weights and spacing are sent from the WIM system to the roadside screening computer.
 5. The roadside screening computer uses the transponder ID to check its credential database for carrier and vehicle information. Axle weights and spacing are calculated in a bridge formula to determine whether the truck is legal on all axles. If the vehicle's credentials are OK and its weight is legal, a "bypass" signal is sent to the AVI reader. Otherwise, it sends a "pull in" signal.
- A. Registration information for interstate and intrastate vehicles is sent to CVIEW in AFF format.
 - B. Overweight / oversize permit information is sent to CVIEW in AFF format.
 - C. SAFER subscription information is sent to CVIEW in EDI 286 format. This includes the updates to safety ratings, insurance, and registration.
 - D. Information about companies and vehicles with transponders is extracted from CVIEW snapshots and sent to roadside screening systems at each location.

Safety Exchange Information

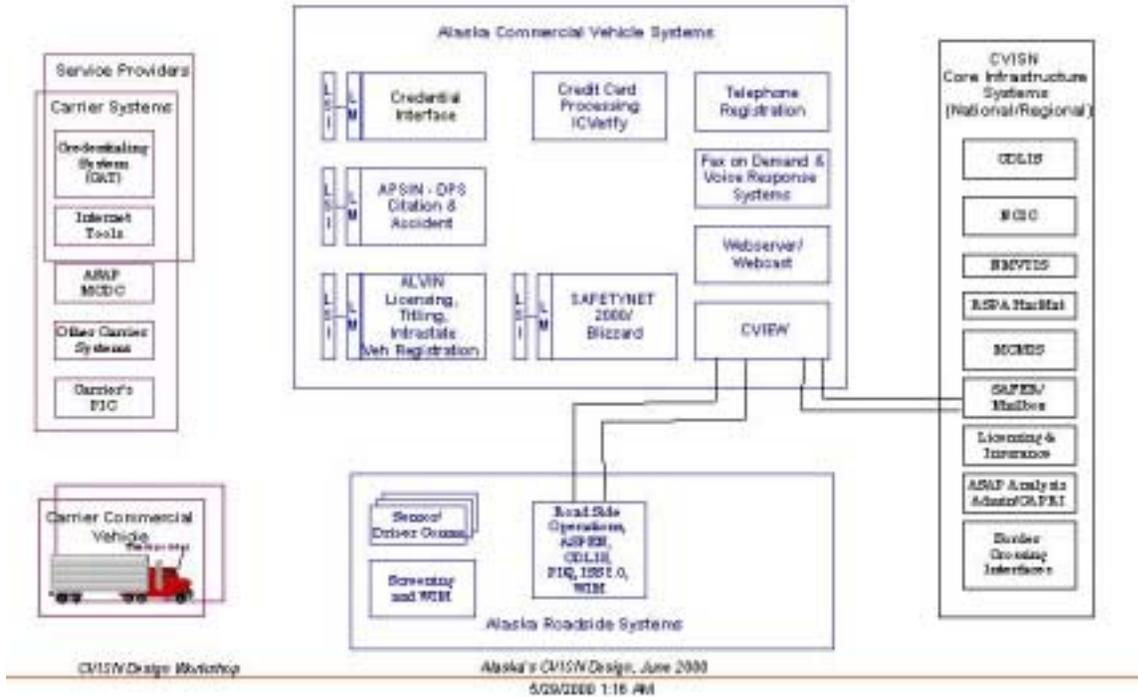
Safety Information Exchange Snapshot Data Collection

Please Note: This plan proposes that Safetynet 2000 will hold and integrate additional information for Citations, Accidents, Hazmat, CAPRI, Emergency Response, OS/DW Permitting, WIM, RWIS and Insurance data for Road side use



Queries for Part Inspections

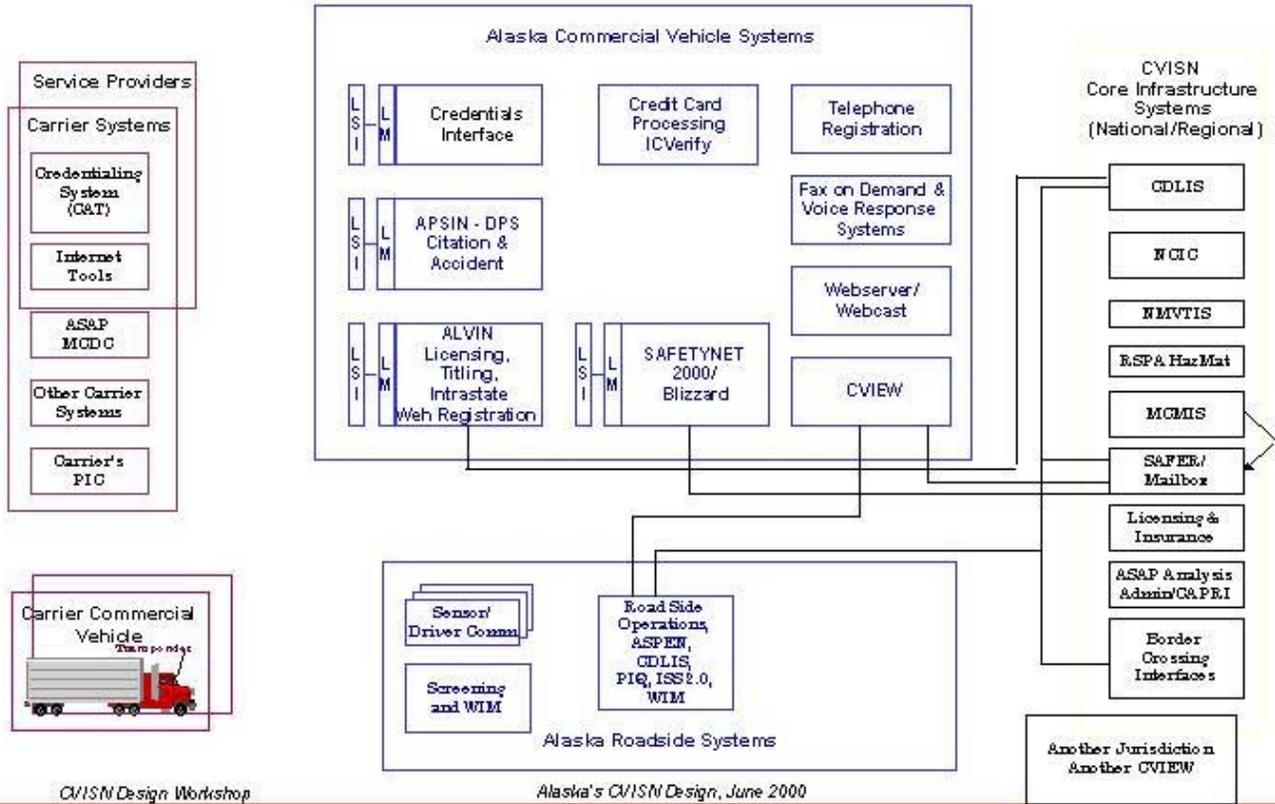
Alaska Query For Past Inspections - Future



Processing of Snapshots

Safety Information Exchange Snapshot Data Collection

Please Note: This plan proposes that Safetynet 2000 will hold and integrate additional information for Citations, Accidents, Hazmat, CAPRI, Emergency Response, OS/DW Permitting, WIM, RWIS and Insurance data for Road side use



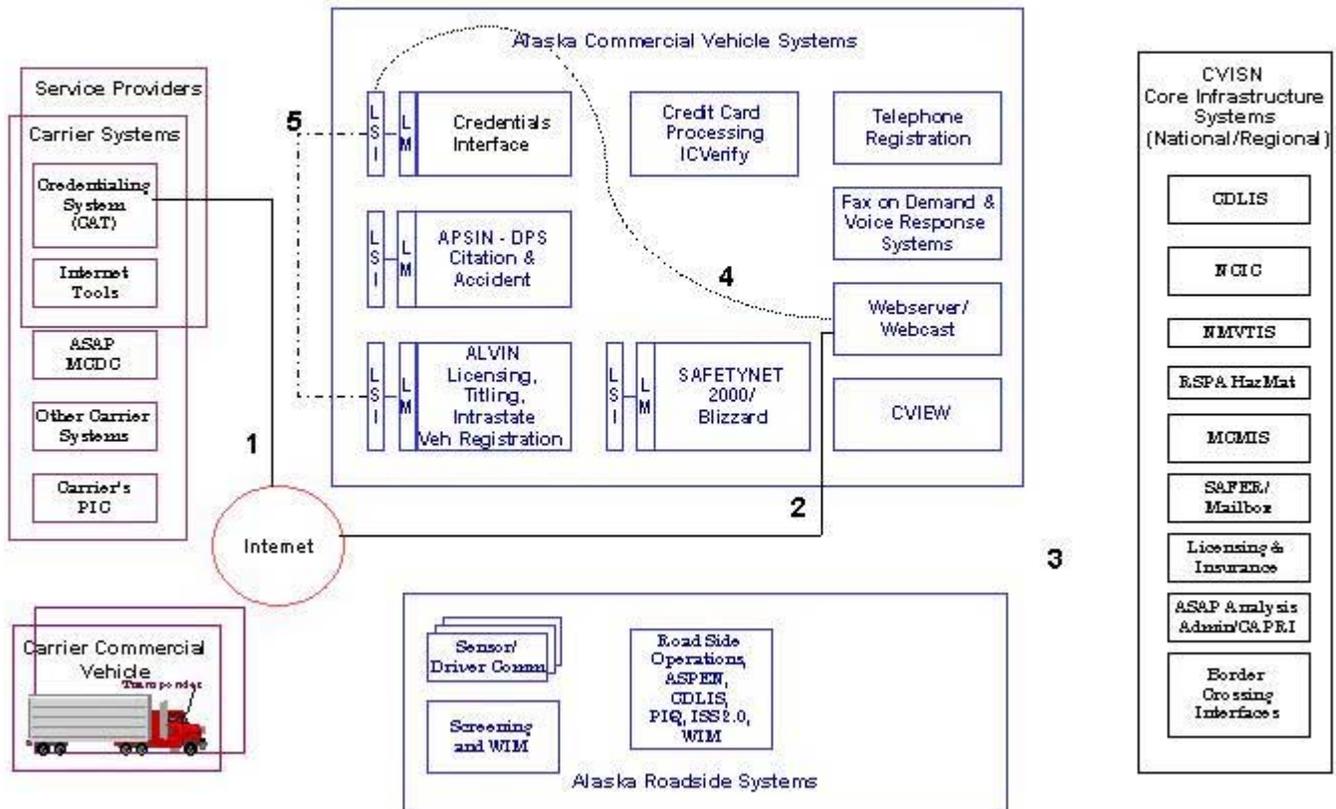
CVISN Design Workshop

Alaska's CVISN Design, June 2000

6/4/2000 11:38 AM

Electronic Registration

Proposed Electronic Registration and Renewal

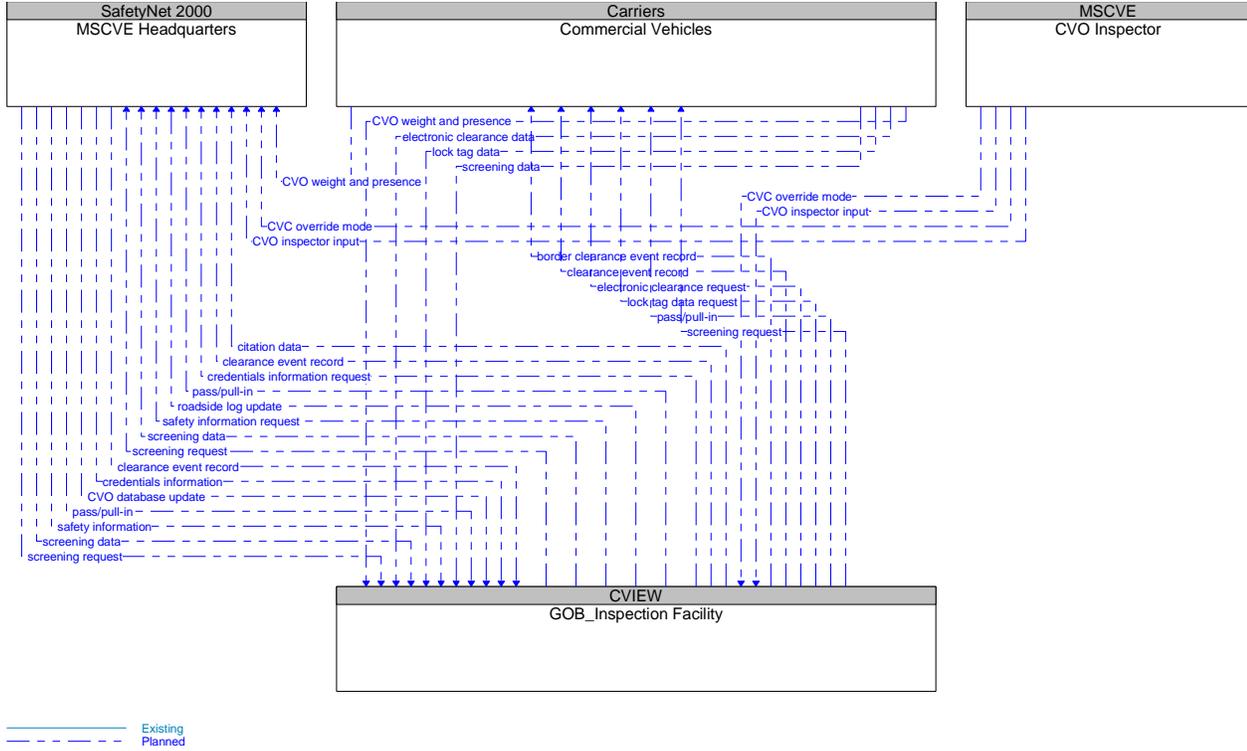


CVISN Design Workshop

Alaska's CVISN Design, June 2000

6/1/2000 10:00 AM

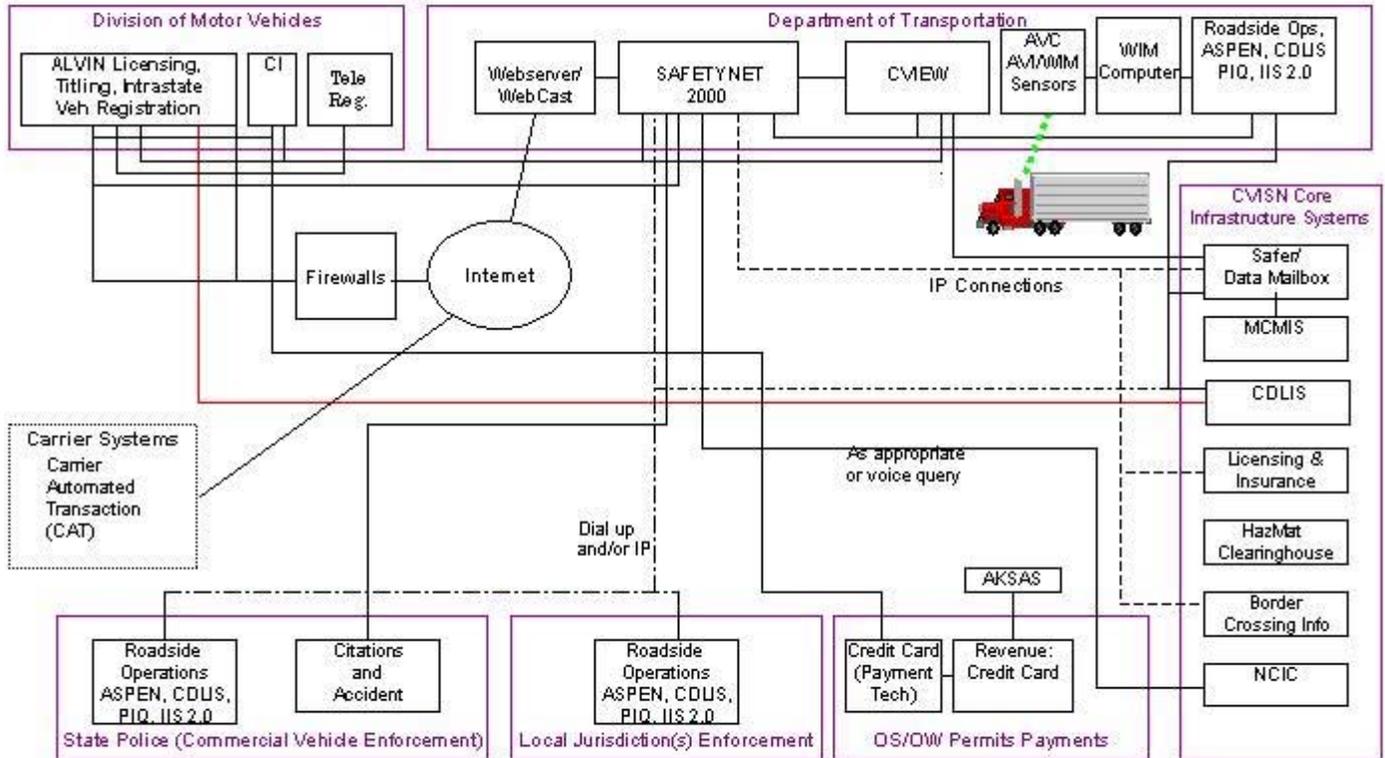
By-Pass Interconnect Diagram - Planned



Network Connections

ALASKA Network Template - Future

Please Note: This plan proposes that Safetynet 2000 and/or another database will hold and integrate additional information for Citations, Accidents, Hazmat, CAPRI, Emergency Response, OS/DW Permitting, WIM, RWIS, & Insurance data for Road side use



Note: Each box is intended to represent a computer system that does or will support CVISN

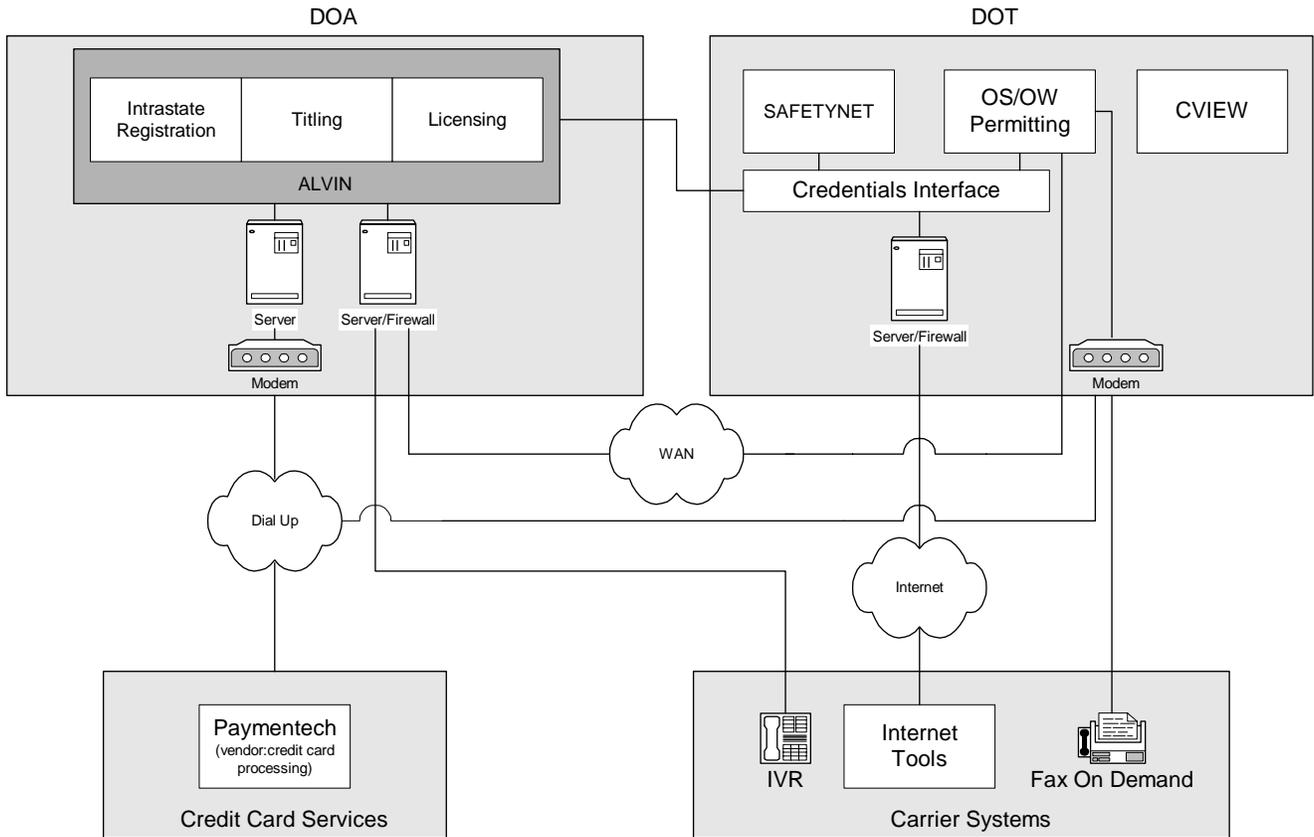
CVISN Design Workshop

Alaska's CVISN Design, June 2000

6/4/2000 8:08 AM

Network – Electronic Credentials Only; Overview

Future Alaska Network Template - Electronic Credentials



Design Workshop

State of Alaska

June 2000

Future Alaskan SUV

THE NEXT GENERATION OF SUVs
The New Kenworth Pilgrimage



End of Document.